

CONTRIBUTIONS TO THE KNOWLEDGE OF SOUTH AFRICAN
MARINE MOLLUSCA. PART VI. SUPPLEMENT

By

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(With 2 plates and 30 figures)

CONTENTS

	PAGE
Foreword	595
Toxoglossa	596
Rhachiglossa	615
Taenioglossa	644
Rhipidoglossa, Docoglossa, Tectibranchiata .	652
Lamellibranchiata	656
Acknowledgements	657
References	657

FOREWORD

This work was published with the aid of a C.S.I.R. grant, after the death of Dr. K. H. Barnard, which occurred on 22nd September, 1964.

The work was prepared for publication by Mr. B. F. Kensley.

Figures 1a, b; 5a, b, c, d, e, f, h; 7b; 10a, b, c, d; 12a, b, c; 13a, b, c, d; 14a, b, c; 15b; 16c, d, e; 17b; 18a, b, c; 19f; 20a, b; 21; 22; 24a, c; 28c; 29a, b, c, d, e; 30a, b, c; are the work of Mr. Kensley. All the remaining descriptions and figures are the work of Dr. Barnard. Only minor editorial changes have been made.

We are grateful to Professor R. Tucker Abbott, Professor J. H. Day, Mr. R. N. Kilburn, Dr. W. Macnae, Dr. A. C. van Bruggen for reading the manuscript and for useful comments and suggestions.

Figures of the following species previously described or mentioned by Dr. Barnard in the earlier parts of the Mollusca are now included:

- Cerithiella vidalensis* Barnard
- Columbarium angulare* Barnard
- '*Columbella*' *confertilirata* Barnard
- '*Columbella*' *polyarosus* Barnard
- Cyclopecten incubans* Barnard
- Drillia armilla* Barnard

† Died September 1964.

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Drillia pselia Barnard
Drillia simplicicingula Barnard
Falsilunatia pseudopsila Barnard
Fusus africanae Barnard
Fusus bonaespei Barnard
Fusus faurei Barnard
Lima symmetrica Barnard
Mangilia muiri Barnard
Marginella differens form *eugenes* Barnard
Nassa muiri Barnard
Solidula niecaensis Barnard
Terebra thielei Barnard
Turbonilla bathybius Barnard
Turris ambages Barnard
Turris multiseriata Barnard
Venericardia nuculoides Barnard

TOXOGLOSSA

Fam. Terebridae

Terebra subulata L.

Terebra subulata Linnaeus, Barnard, 1958: 78. Macnae & Kalk, 1958: 128.

Additional record: Delagoa Bay.

Terebra loisae Smith, 1903

Terebra loisae Smith, 1903: 360. Barnard, 1958: 79.

Cox, 1939, compared this species with *marmorata* Deshayes, from the post-Pliocene of Chai-Chai (Inhambane).

Terebra lightfooti Smith, 1903

Terebra lightfooti Smith, Barnard, 1958: 79.

Description: Shell 20 mm. Protoconch nucleus plus 8 whorls; 3 whorls following the nucleus smooth, but this is evidently due to corrosion. No radula. Fulvous between the ribs, but leaving a clear pale spiral band from top of aperture around base.

Locality: Saldanha Bay.

Additional records: 33° 55' S. 17° 55' E., 31 fathoms. 35° 5' S. 17° 56' E., 23 fathoms (U.C.T.).

Terebra nebulosa Sow., 1844

Terebra nebulosa Sowerby, 1844: pl. 43, fig. 51. Barnard, 1958: 79.

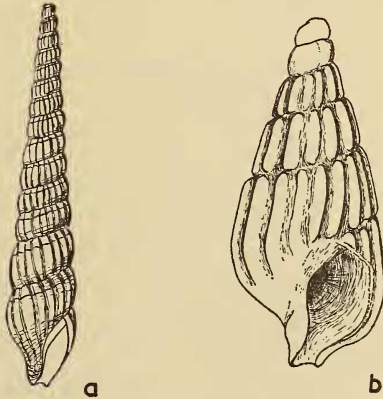
Additional record: Inhaca Island.

Terebra capensis Smith, 1903*Terebra capensis* Smith, Barnard, 1958: 79.*Additional records*: Simon's Bay, 70 metres; St. Francis Bay, 80 metres.*Terebra diversa* Smith, 1901*Hastula diversa* (Smith), Kira, 1955, pl. 38, fig. 15.*Terebra diversa* Smith, Barnard, 1958: 80.*Additional record*: Inhaca Island.*Terebra affinis* Gray, 1834*Terebra affinis* Gray, 1834: 60. Melvill & Sykes, 1898: 41. Macnae & Kalk, 1958: 128. Barnard, 1958: 80.Not *affinis* Basterot; see Dautzenberg, 1935: 5.*Terebra dimidiata* L.*Terebra dimidiata* Linnaeus, Swanton, 1902: 195. Barnard, 1958: 80.

Swanton records a specimen in the Durban Museum.

Terebra sp.

Fig. 1a

Description: Shell 62.5×10.5 mm. No radula. Apex broken. Axial ribs slightly curved and slightly retractive, 14 increasing to 17, extending on to base. Spiral groove on penultimate whorl 1.3 mm below the suture. Very fine spiralFIG. 1. a. *Terebra* sp. b. *Terebra thielei* Brnd.

striae, 2 between suture and spiral groove, 8 (4-4) below the spiral groove; on base about 10, also very faint.

Locality: $29^{\circ} 47' S. 31^{\circ} 22\frac{1}{2}' E.$, 100 fathoms. Fisheries Survey Station K 214.

Fam. **Conidae**

Since the publication of Part 1 (1958) I am indebted to the Library of the Council for Scientific and Industrial Research for the use of a copy of Sowerby's *Thesaurus*, vol. 3 (1857-8). Sowerby's plates are suggestive of several synonymies, but certainty can only be obtained by examination of the actual specimens or types (if extant).

The two species *crotchii* and *gilvov* described by Reeve from Saldanha Bay may perhaps be referable to one of the west African species. But the locality cannot be accepted as reliable. Only *gradatulus* and *elongatus* are known from the west coast of South Africa, and Sowerby's figures of Reeve's species differ in shape from both of these.

The identity of Port Alfred shells with west African species (Bartsch, Turton: *grayi*, *guttatus*) is unlikely.

Kohn (1960) has described the spawning, egg-masses, and larval development of Indian Ocean species.

Kohn (1963, 1964) has reported on the existence of the type specimens, and the identity of the recently described species. Part 1 deals with the Linnaean species, 1758-67, Part 2 with those of Chemnitz and others, 1766-86.

Conus figulinus L.

Conus figulinus Linnaeus, Barnard, 1958: 82. Kohn, 1960: 318, fig. 3 (egg-mass).

This species is a sand-dweller. There are no solid objects in this habitat to which the egg-cases could be attached. Consequently the first five cases are buried in the sand as an anchor; they contain no eggs. The following cases, with eggs, are attached to this anchor.

Conus orbigny Audouin, 1831

Fig. 2

Conus orbigny Audouin, Sowerby, 1858: 12, pl. 202, fig. 368. Kira, 1955, pl. 38, fig. 5.

Description: Apex broken (? 2 or 3 whorls) 6 whorls remaining. Each whorl above the shoulder with 4 (5) fine spiral lirae, crossed by slightly procurved growth-lines, producing a more (early whorls) or less (later whorls) distinct clathrate sculpture. Shoulder with 14 knobs on uppermost remaining whorl, increasing to 17 (18) on last whorl, rounded on earlier whorls, but obliquely oval on later whorls; immediately below shoulder 2 spiral sulci close together. On base about 24 similar sulci, the upper one separated from the pair of sulci (below the shoulder) by a wider space than that between each of the following pairs of sulci. All the sulci are crossed by growth lines, which thus produce a series of squarish pits.

Locality: Northern Natal, deep water (Mrs. H. Boswell, 1962).

Remarks: A second specimen has its apex embedded in a *Xenophora pallidula*, 4 whorls being visible.

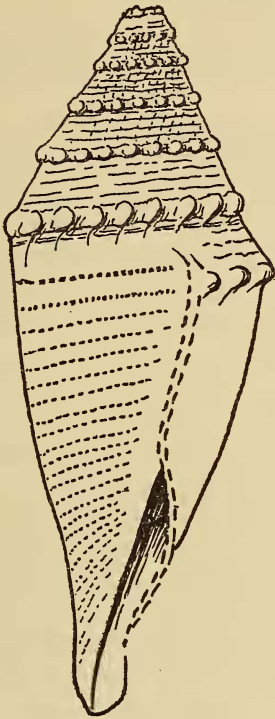


FIG. 2. *Conus orbigny*
Audouin.

Conus eucoronatus Sow., 1903

Conus eucoronatus Sowerby, Barnard, 1958: 83.

Mrs. H. Boswell has shown me (1962) a specimen taken off Pemba, which seems to me to agree with *varius* Linn. as figured by Sowerby (1857: 7, pl. 189, figs 40-42). Mrs. Boswell disagreed, saying she had examples of *varius* in her collection, which were different from the Pemba shell. It is true there is a resemblance between the latter and *eucoronatus*; but there is considerable difference between the axial plications cut by spiral grooves into narrow (axially) oblong nodules of *eucoronatus* and the prominent rounded nodules shown in Sowerby's figures of *varius*. The Pemba shell agrees with the latter.

The fragment from off O'Neil Peak (S.A.M. A8660) has the oblong nodules slightly broader than in the type and the other specimens; but does not really resemble Sowerby's figures of *varius*.

Conus coronatus Dillwyn, 1817

Conus coronatus (Gmelin, *pars*) Dillwyn, 1817: 403. Dautzenberg, 1937: 75.

Conus minimus Linnaeus, Sowerby, 1858: 9, pl. 189, figs 54, 55, pl. 191, figs 99, 111. Barnard, 1958: 85.

According to Dautzenberg, Linnaeus' description of *minimus* is unrecognizable as a species, and should be replaced by Dillwyn's name.

Conus aplustre Rve, 1843

Conus aplustre Reeve, Sowerby, 1858: 32, pl. 205, fig. 448.

Conus infrenatus Reeve, Sowerby, 1858: 32, pl. 205, figs 451-453. Barnard, 1958: 87.

Conus bairstowi Sowerby, 1889: 9, pl. 1, fig. 12.

Sowerby's figures in the *Thesaurus* (especially fig. 452) show that *infrenatus* and *bairstowi* are synonymous. But *infrenatus* Reeve, 1848 appears to be synonymous with *aplustre* Reeve, 1843.

On the explanation to Sowerby's plate 205, Delagoa Bay is given as the locality for *infrenatus*. This probably means Algoa Bay (cf. *Thesaurus Conchyliorum* 3: 70 'Delagoa Bay, Cape Colony').

Additional records: Fossil, Algoa Bay. 33° 04' S., 27° 57' E., 84 metres. This specimen has the *bairstowi* colour pattern.

Conus natalis Sow., 1858

Conus natalis Sowerby, 1858: 31, pl. 199, figs 292, 293. Melvill, 1914: 180 (related to *rosaeus* and *tinianus*, i.e. *aurora* Lamarck.). Barnard, 1958: 88.

Sowerby's two figures show the extremes of variation in the colour pattern.

Mr. P. Elston of Durban has shown me a fine specimen of 55 × 29 mm with the shape of *gilchristi* and the colour pattern of *natalis*, taken off Natal from a fish stomach by the late H. W. Bell-Marley.

There is no doubt in my mind that *gilchristi* should be considered a synonym of *natalis*. In circular no. 43 of the Conchological Society of Southern Africa, Mrs. C. Connolly states that *natalis* and *gilchristi* live together under large stones just below low-tide in the East London area; the *natalis* pattern was more common than the *gilchristi* pattern.

Conus papilionaceus Hwass in Bruguière, 1792

Conus papilionaceus Hwass in Bruguière, 1792. Sowerby, 1858: 26, pl. 197, fig. 233. Nicklès, 1950: 131, fig. 264, and var. *prometheus*, fig. 265. Paes-da Franca, 1960b: 26, pl. 2, figs 15, 16.

I have seen a specimen, 133 × 67 mm from deep water off Natal in the collection of Mrs. H. Boswell (1962). It agrees with an Angolan specimen of the var. *prometheus* Brug.

Conus pictus Rve, 1843—*scitulus* Rve, 1849

Conus pictus Reeve and *Conus scitulus* Reeve, Barnard, 1958: 88, 89.

Sowerby (1858) in the explanation to plate 205 quoted *jaspideus* Kien, pl. 55, fig. 4, and *scitulus* Reeve as synonyms of *pictus* Reeve, and on page 55 (index to species) puts *scitulus* as a synonym of *pictus* with a query.

On page 31 under *pictus* Sowerby included his figure 'var. ?309', but figure 309 on page 200 was named *simplex*. The figure with its white shoulder patches resembles *simplex* (cf. Barnard, 1958: 89).

C. pictus, *scitulus* and *simplex* are not spirally striate above the shoulder; *aurora* (and *elongatus*) are.

Conus elongatus Chemn., 1791*Conus mozambicus* Krauss, 1852: 39.*C. elongatus* Chemnitz, Barnard, 1958: 90.

Additional record: Lüderitzbucht.

Conus aurora Lam., 1810*Conus aurora* Lamarck, 1810: 423. Tomlin & Winslow, 1927: 43-45 (synonymy). Tomlin, 1931: 440-441 (synonymy), 1937: 216. Barnard, 1958: 91. Janus, 1961: 8, pl. 3, figs 11, 12 (type of *caffer* Krauss).

Tomlin (1931) quotes the names which he and Miss Winslow (1927) considered synonyms, viz. *beckeri*, *caffer*, *fulvus*, *lavendulus*, *loveni*, *rosaceus*, *secutor*, *succinctus* and *tinianus* Sowerby (*non* Bruguière). In his 1937 catalogue of cones, Tomlin included also *alfredensis*, *kraussi* and *lautus*, but transferred *succinctus* to the synonymy of *infrenatus*. I have suggested (1958: 91) that Tomlin intended to make *algoensis* (not *alfredensis*) a synonym of *aurora*, but a *lapsus calami* or a typographical error intervened.

Adams's use of the word 'carneola' in his description of *succinctus* seems to me to indicate *aurora* rather than *infrenatus* but Sowerby's figure (1858, fig. 257) approximates more to the latter and its varieties than to any of the varieties of *aurora*. (*Conus infrenatus* does sometimes become pink when worn.)

If *verreauxii* Kiener 1849* was collected at the Cape by Verreaux, and if it resembles Sowerby's figures (1858: pl. 205, figs 463, 464) of *conspersus* Reeve (with which Sowerby said it was synonymous) then it is another synonym of the common and very variable *aurora*.

Periostracum furry, setose-fimbriate around the shoulder, 14-15 spiral lines of setae on body-whorl, some of those in the middle of the series double.

Fam. **Turritidae**

Powell (1964) gives a revision of the Turritidae, of which some of the generic changes are followed here.

Clavatula sinuata (Born, 1778)*Clavatula sinuata* (Born), Tomlin, 1931: 439 (synonymy). Barnard, 1958: 98, figs 3d, 5a.

Description: Shell 29 × 13 mm. Protoconch apex corroded, 6 whorls remaining. 3rd and 4th whorl with 11 axial ribs, 5th with 10, 6th with 8. Towards the end of the last whorl the outer lip has been broken three times. Fine spiral striae over whole whorl and base. The final whorl (back of outer lip) has no projections which could be termed ribs. No cingulum. The unusually wide spacing of the ribs occurs on all the whorls and is especially noticeable on the last whorl.

Locality: Lüderitzbucht.

* Sherborn & Woodward (1901: 218) gave the date of Kiener p. 249 as 1849, but plate 60 was published earlier; on page 217 Sherborn & Woodward gave the date of the plates to *Conus* as 'Livr. 112. 1845', but in their summary on page 218 as 'Livr. 105-112. Plates, 1846'.

var. *sigillata* Rve, 1844

Clavatula sinuata (Born) var. *sigillata* Reeve, Barnard, 1958: 99, fig. 5b.

Three specimens from Sea Point, Cape Town (University of Cape Town, C P 618).

Protoconch and 1st whorl missing	..	..	..	..	4 whorls	10 × 5 mm.
Protoconch missing	..	..	..	..	8 „	20 × 8 mm.
Protoconch missing	..	..	..	..	8 „	18 × 3 mm.

Clavatula semicostata Kiener

(Date impossible to trace)

Drillia halidoma Bartsch, 1915. Tomlin, 1931: 439.

Clavatula semicostata Kiener, Barnard, 1958: 141, fig. 5f.

Radula of a small specimen from Port Elizabeth examined and the genus confirmed.

Clavatula tripartita Weink. in Küster, 1876

Clavatula tripartita Weinkauff in Küster, 1876, Smith, 1912: 53. Barnard, 1958: 143, fig. 4d.

Description: Protoconch 2 whorls, junction with 1st post-natal whorl not very distinct. Post-natal whorls 8. Previous description confirmed (*tripartita* form). Spiral striae distinct on cingulum, sulcus and shoulder. Operculum oval, nucleus in middle of inner margin which is thickened. Shell 29 × 11.5 mm.

Radula (which confirms the genus) with 47 rows, central plate small, oblong (longer than wide), with median cusp, lateral plate with wing-like appendage.

Animal pale, foot speckled with grey. Tentacles short, lobate, eyes in middle of outer margin.

Periostracum very thin, brown. The shell carries 15 egg-capsules of a *Marginella*. Wherever an egg-capsule has been affixed the periostracum and surface of the shell have disappeared, leaving a very shallow oval depression.

Locality: Port St. Johns.

Additional records: 31° 38' S. 29° 34' E. (Port St. Johns), 26 fathoms. Another specimen (fresh but empty) 30° 47' S. 30° 27' E., 36 metres. Also found in the 10 ft raised beach at Port Alfred.

Clavatula turriplana Sow., 1903

Clavatula turriplana Sowerby, Barnard, 1958: 144.

Description: Shell 46.5 × 13 mm. Diameter of uppermost whorl 5 mm. Protoconch and 1st post-natal whorl missing; 11 whorls remaining. Upper 3 whorls slightly worn, smooth, with sigmoid growth-lines, here and there one (temporary outer lip) more prominent than the others. Fourth and following whorls with fine spiral striae over whole whorl, but feeble and evanescent on last whorl, base with about 23 additional striae. Fourth whorl with 15 low oblique protractive axial ribs below sulcus, 14 on each of the 5th to 8th whorls,

thereafter evanescent, obsolete on last whorl. Profile of whorls nearly straight, not quite so convex as in the type, slightly concave at lip sinus, which is deep and not quite as wide as the slight cingulum or the lower portion of whorl.

Upper half of whorls (sulcus) dirty yellowish, lower half castaneous; aperture suffused within; columella upper part white lower part (rostrum) lemon yellow (cf. colour of type, p. 144).

Operculum oval, nucleus in middle of inner margin, which is thickened; 8×4 mm in aperture 17 mm.

Radula as in *C. sinuata*, 22 pairs of teeth, central plate with acicular cusp, lateral plate with 'accessory' plate.

Locality: $34^{\circ} 30' S. 24^{\circ} 40' E.$, 56 fathoms.

Clavatula sp.

Fig. 4b

Description: Shell 44×15.5 mm. Apex broken, 8 whorls remaining. Tripartite, upper third (cingulum) not prominently convex, middle third (sinus) straight or slightly concave, lower third with oblique nodules, 17 on 5th, 6th and 7th whorls, evanescent on 8th. Sinus deep.

Operculum oval, nucleus at middle of inner margin, which is thickened.

Shell fawn, somewhat mottled, nodules pale. Animal removed.

Locality: Off Natal coast. (Mrs. H. Boswell, 1960.)

Remarks: Differs from *tripartita* in the wider sinus. Cf. *Surcula pyramidalis* Schepman, 1913: 423, pl. 27, fig. 10, but the latter has a narrower rostrum, and a series of nodules (about 30) on the cingulum, the latter is much narrower and consequently the middle third (sinus) is much broader.

Turris stolidi (Hinds, 1844)

Turris stolidi (Hinds, 1844a), Barnard, 1958: 101, fig. 3e.

Additional record: $34^{\circ} 15' S. 25^{\circ} 5' E.$, 6 fathoms, one juvenile.

Turris indica Röding, 1798

Turris indica Röding, Steuer, 1939: 1. Barnard, 1958: 105.

Additional record: $29^{\circ} 53' S. 31^{\circ} 06' E.$, 71 metres.

Turris multiseriata (Smith, 1877)

Fig. 3c

Turris multiseriata (Smith), Barnard, 1958: 109.

Additional record: Off Umhlanga River (Natal), 22–26 fathoms, one dead (S.A.M. A8855, Pieter Faure collection).

This opportunity is taken to figure the protoconch.

Turris flavidula (Lam., 1822)

Drillia flavidula (Lamarck), Barnard, 1958: 128, fig. 12b.

Remarks: Further distinguishing characteristics: some specimens white with a brown sutural band.

Radula like that of *T. stolidula*, 30 rows, no central plate, lateral plate with wing-like appendage.

Additional records: 29° 53' S. 31° 06' E., 71 metres. A specimen from deep water, Natal, 60 × 14 mm, apex (?4 whorls) missing, 10 whorls remaining. A specimen 42 mm long attached to a *Xenophora pallidula* from the Zululand Coast. (S.A.M.) A specimen 32 mm long attached to *X. pallidula* from same locality (Durban Museum).

Mr. Dance of the British Museum (Natural History) considered (*in litt.*) the last specimen to be '*Brachytoma cf. alata* Smith' (*sic* ? = *albata* Smith, 1882). The South African Museum specimen appears to be conspecific with the specimen previously recorded as *flavidula*.

Turris ambages Barnard, 1958

Fig. 3a, b

Turris ambages Barnard 1958: 148, fig. 23b.

A figure of the complete shell which is now given, indicates that this is a true *Turris* as defined by Powell (1964).

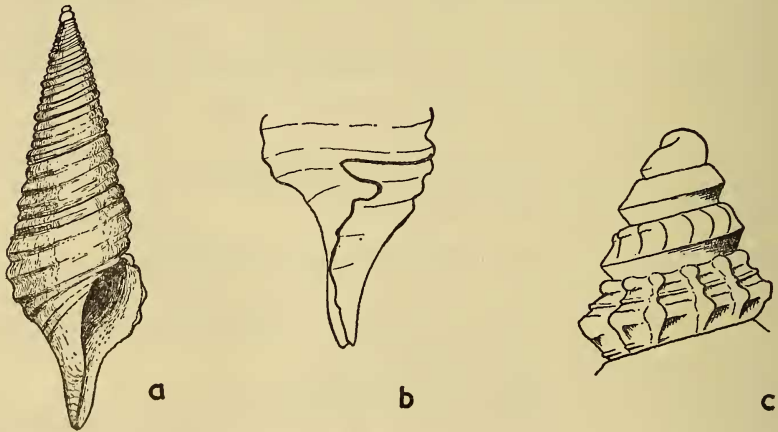


FIG. 3. a. *Turris ambages* Brnd. b. *Turris ambages* Brnd. Outline of lip-sinus. c. *Turris multiseriata* (Smith). Protoconch.

Surcula aditus n.sp.

Fig. 4a

Description: Aperture 5.5, spire 4.5 mm. Protoconch 2 whorls, smooth, but with traces of microsculpture (? spiral striae), altitude and diameter 0.6 mm. Post-natal whorls 4. Axial ribs 9 on 1st and 2nd whorls, 10 on 3rd, 11 on body

whorl, crossing sulcus but petering out on base. Spiral lirae 4 on 1st whorl, 5 on 2nd, 6-7 on 3rd, 8 on 4th, 9-10 additional lirae on base with a few intermediaries, passing into fine lirae on rostrum. Sulcus with a few fine spiral lirae, but indistinct, as are the growth-lines. Lip sinus moderate; canal short. Shell 10×4.5 mm. Pale buff.

Locality: Off Cove Rock (East London), 22 fathoms.

Type: S.A.M. A29759, Pieter Faure collection.

Remarks: Near *Surcula faurei* Barnard, 1958, but more slender, with higher shoulder and fewer ribs.

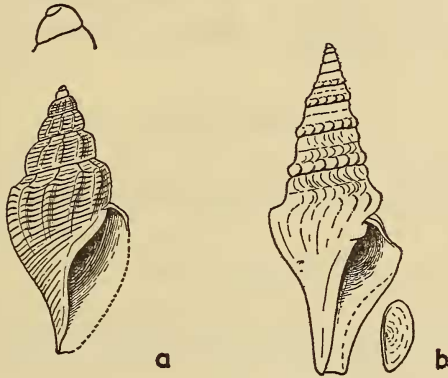


FIG. 4. a. *Surcula aditus* n.sp. b. *Clavatula* sp.
With operculum.

**Drillia fultoni* (Sow., 1888)

Drillia fultoni (Sowerby), Barnard, 1958: 118.

Tomopleura (*Maoritomella*) *fultoni* (Sow.), Powell, 1942: 110.

Description: Radula seen and confirmed. Absence of operculum confirmed. Protoconch 2 whorls, smooth, often corroded as are 1st and 2nd post-natal whorls, but sometimes remains polished when 1st post-natal whorl is corroded.

Additional record: False Bay, 47 specimens.

Asthenotoma vertebrata (Smith, 1875)

Asthenotoma vertebrata (Smith), Barnard, 1958: 113, figs 8c, 9c.

Additional record: $29^{\circ} 50' \text{ S. } 31^{\circ} 04' \text{ E.}$, 20 metres, 2 dead.

†*Drillia platystoma* (Smith, 1877)

Drillia platystoma (Smith), Barnard, 1958: 125.

Delete from synonymy given in Barnard, 1958: 126 *Surcula macilenta* Melvill (see below).

* In sculpture, form and radula, this species is a typical *Tomopleura*. The paucispiral protoconch, however, places it in *Maoritomella* Powell, 1942.—ED.

† This species should perhaps be placed in the genus *Austrodrillia* (see Powell, 1942)—ED.

Additional records: Off Cape Vidal (Zululand) 80–100 fathoms, one broken. Off Hood Point (East London), 49 fathoms, 2 dead, South African Museum, Pieter Faure collection.

Drillia macilenta (Melvill, 1923)

Surcula macilenta Melvill, 1923*b*: 168, pl. 5, fig. 13. Tomlin, 1931: 438.

Drillia platystoma (Smith, *pars*), Barnard, 1958: 126.

Description: One specimen, 10×3.3 mm, has a smaller protoconch (altitude and diameter 0.75 mm), than *platystoma*; also the shoulder is above the middle of the whorl as shown in Melvill's figure, instead of in the middle.

Nevertheless, the two forms are very closely similar.

Locality: Off Hood Point (East London), 49 fathoms, one dead. (S.A.M. A29765, Pieter Faure collection).

Drillia perfluans Barnard, 1958

Drillia perfluans Barnard, 1958: 132, fig. 15a.

Close to *thetis* Smith, but with fewer spiral striae.

Drillia spiralis Barnard, 1958

Drillia spiralis Barnard, 1958: 134, fig. 17b.

Bears a very close resemblance to *Belalora thielei* Powell, 1951: 172, pl. 6, fig. 20, and fig. 115, protoconch from off the Falkland Islands, 110–219 metres, but is more slender.

B. thielei has fine axial lines on the last whorl of the protoconch (not traceable in *spiralis*); 14 axial ribs on the penultimate and 15 on the body whorl; 12 spiral lirae below the shoulder and about 58 on the body whorl plus base.

Drillia dovyalis n.sp.

Fig. 6a

Description: Spire about $1\frac{1}{2}$ times length of aperture. Protoconch $1\frac{1}{2}$ whorls, altitude and diameter 0.5 mm, smooth. Post-natal whorls 4. Axial ribs 15 on 1st and second whorls, 16 on 3rd, 17 on 4th, crossing sulcus, but not strongly developed, petering out on base. Spiral lirae 4 on last whorl, 5 on 2nd and 3rd, 6 on 4th, the uppermost one forming a shoulder, a fine lira on sulcus; on upper part of base 6 lirae, on lower part 8–9 close together. Sulcus not concave. Lip sinus moderate. Shell 4.8×2 mm, white.

Locality: Off Sandy Point (North of Kei River), 51 fathoms, one, dead but fresh.

Type: S.A.M. A29760, Pieter Faure collection.

Remarks: In sculpture not unlike *Lienardia grayi* (Rve) and *Pleurotomella elisa* Thiele, but more slender. Differs from *collina* Barnard, in having all the spiral lirae of equal strength (except the one on the sulcus).

Dovyalis is the botanical name for the Kei Apple tree (see Marloth, 1925, *Flora of South Africa*, II, Section 2, p. 194).

Drillia pecus n.sp.

Fig. 5b

Description: Protoconch $1\frac{1}{2}$ whorls, altitude and diameter 1 mm, smooth (possibly minutely punctate or spirally striate when fresh). Post-natal whorls $3\frac{1}{4}$ (last whorl broken). Axial ribs 15 on each whorl, oblique, protractive, crossing sulcus, petering out on base; crossed by weak spiral lirae 4-5 on 1st whorl, 7-8 on 2nd, 10 on 3rd, with feebly impressed intervening striae. Sutures not undulate. Sulcus not concave, lip sinus adjoining suture. Shell 6.5×2.75 mm.

Locality: Off East London, 400-450 fathoms, one with last whorl broken.

Type: S.A.M. A29761, Pieter Faure collection.

Remarks: Like *Drillia perfluans* Barnard, but with larger protoconch, more axial ribs and stronger spiral sculpture. Named after the Buffalo River at East London.

Drillia sp.

Fig. 5c

Description: Protoconch $1\frac{1}{2}$ whorls, altitude 0.5, diameter 0.75 mm, smooth. Post-natal whorls 3. Axial ribs 10-11. Spiral striae may be present, but the shells are not in a good condition. 4.5×2 mm.

Locality: Five dead specimens from off Cape Natal (Durban) 85 fathoms.

Type: S.A.M. A29762, Pieter Faure collection.

Remarks: These specimens belong to the same group as *perfluans*, *falcicosta*, *morgana* and the above n.sp. *pecus*, characterized by feeble or obsolete spiral sculpture.

Drillia omia Barnard, 1958

Drillia omia Barnard, 1958: 123, fig. 11a.

Four specimens from dredgings off the Orange River mouth (1962, S.A.M. A29667) indicate that the locality originally suggested (? Port Alfred) was incorrect. It now seems probable that the type set came from Table Bay, or Dassen Island, or Saldanha Bay, from which localities the South African Museum has at one time or another received specimens.

The largest specimen is 8.5 mm long. The shells are not beach-worn and polished like the type set, but are more or less corroded, especially at the apex, like many other molluscs from the west coast.

The original description is confirmed. The ribs, however, encroach a little more on the sulcus, sometimes almost reaching the suture above.

Drillia sp.

Fig. 5d

Description: Protoconch corroded. Post-natal whorls 4. Axial ribs 11, or 12 on 1st whorl (indistinct), increasing to 14 on last whorl, crossing the sulcus, narrow, rather sharp, sigmoid; crossed by 12-14 fine spiral lirae on last whorl from shoulder downwards, indistinct in sulcus, at least 20 additional lirae on base.

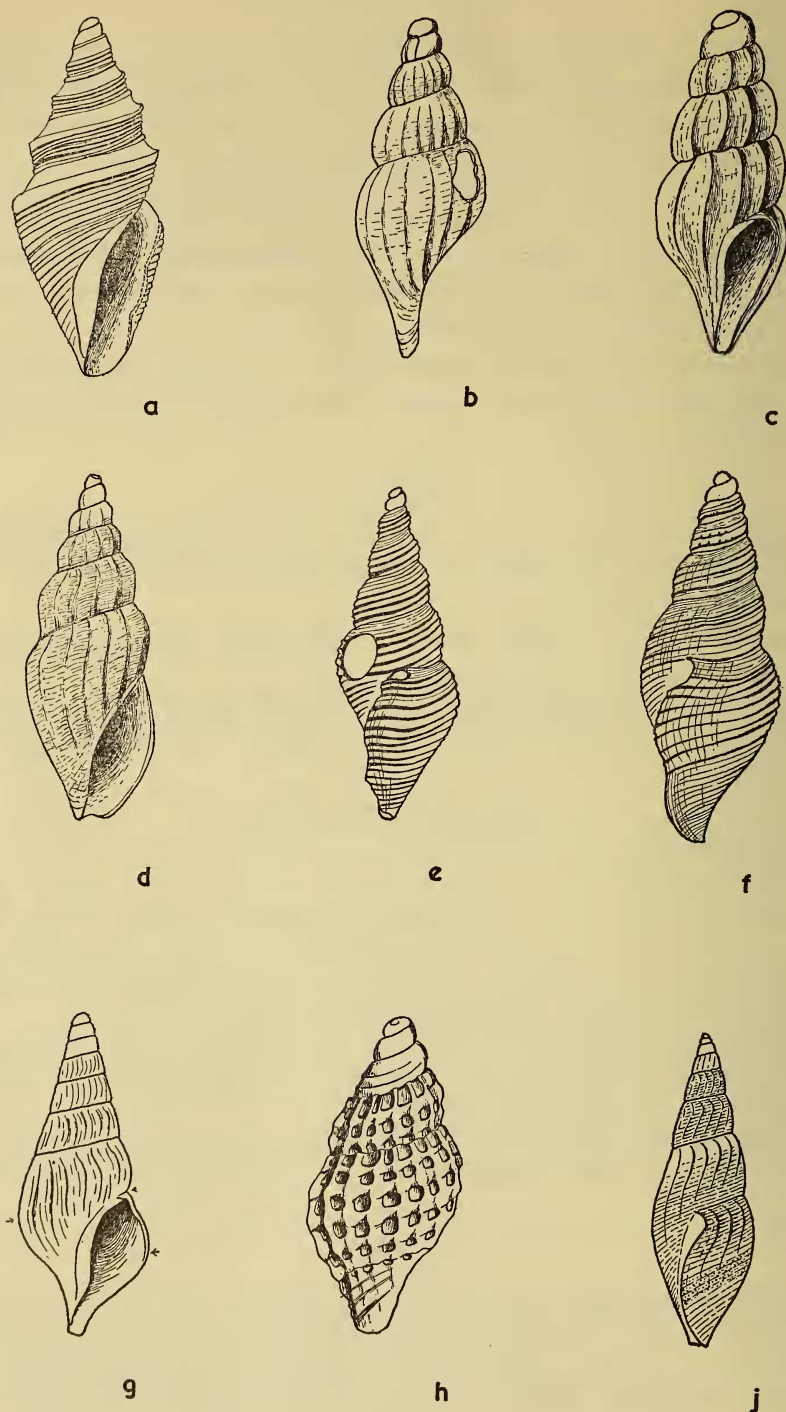


FIG. 5. a. *Drillia simplicicingula* Brnrd. b. *D. pecus* n.sp. c. *Drillia* sp. d. *Drillia* sp. e. *D. armilla* Brnrd. f. *D. pselia* Brnrd. g. '*Clavatula*' *tumida* (Sow.) h. *Mangilia muiri* Brnrd. j. *Mangilia*?

Shoulder not prominent, sulcus not concave, lip sinus broad, adjoining suture, no parietal callus.

Shell 8×3 mm, greyish white, 3 faint brown bands, one below the shoulder, the broadest one in middle of base, starting from the suture (only just visible above the suture), upper and lower margins of the band with darker spots and edging.

Locality: Langebaan (Saldanha Bay), U.C.T.

Drillia diasi Barnard, 1958

Drillia diasi Barnard, 1958: 137.

Additional record: $34^{\circ} 16' S.$ $18^{\circ} 14' E.$, 158 metres, one dead.

Drillia erepta n.sp.

Fig. 6b

Thesbia algoensis non Thiele, Barnard, 1958: 161, fig. 30.

Description: Protoconch $1\frac{1}{2}$ whorls, smooth. Axial ribs about 15 on 1st whorl, 18-19 on 2nd, 21 on 3rd; spiral lirae 4 on 1st whorl, 4-5 on 2nd, 5 on 3rd, also one weaker lira on the sulcus (in my 1958 description the lira on the sulcus was included in the numbers of the spiral lirae).

Shell 4.5×2.25 mm.

Locality: Off Cape Morgan, 47 fathoms, one worn specimen; $33^{\circ} 50' S.$ $25^{\circ} 54' E.$ (Algoa Bay) (probably about 30 fathoms). Off Cape St. Blaize, 125 fathoms, 2 dead.

Type: S.A.M. A8734, A29763, A29764, Pieter Faure collection.

Remarks: The three additional specimens are less worn than the Cape Morgan one, which is now shown to have been wrongly referred to *T. algoensis*, and must be rescued from its false position.

The sutures are more impressed, the profile more convex than in *T. algoensis*, and there is a definite, though not concave, sulcus; and as previously remarked the ribs and lirae are fewer in number. The protoconch and lip sinus show that this is not a columbellid.

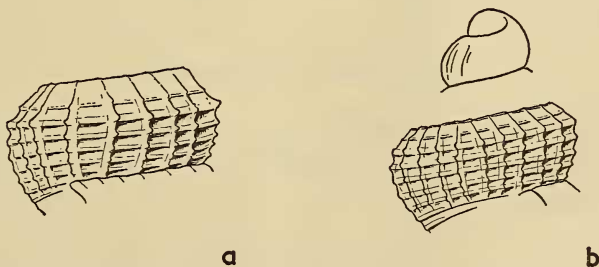


FIG. 6. a. *Drillia dovyalis* n.sp. One whorl. b. *D. erepta* n.sp. One whorl & protoconch.

'Clavatula' tumida (Sow., 1870)

Fig. 5g

'Clavatula' tumida (Sowerby), Barnard, 1958: 111, figs 4c, 8a, 9a.

A six-whorled specimen from off Cape St. Blaize, 21×9 mm in 125 fathoms. (Pieter Faure collection): 2nd–5th whorls and upper half of last whorl yellowish-brown, base of latter white, sharply demarcated.

Clathurella crassilirata Smith, 1904*Clathurella crassilirata* Smith, 1904a: 27, pl. 2, fig. 6.

A specimen from East London, 9 mm long, presented to the South African Museum by R. N. Kilburn (1960). A specimen was also found at Jeffrey's Bay.

Acrobela acus Barnard, 1958*Acrobela acus* Barnard, 1958: 149.

Description: A dead but well-preserved specimen, 7.5×2.5 mm, from False Bay. Post-natal whorls 6. On 3rd whorl the uppermost of the 3 lirae separates into 2, a fine upper lira bordering the sulcus, and a thicker one; on 4th whorl a fine intermediary develops between the upper and middle original lirae, and another between the middle and lower lirae, total thus 7 (an injury on 6th whorl has caused a slight irregularity in the sequence of the lirae. Outer lip strongly produced beyond the deep sulcus.

Additional records: Algoa Bay, 67 fathoms, 2 dead (S.A.M. A8805, Pieter Faure collection).

**Cythara alfredi* (Smith, 1904)*Cythara alfredi* (Smith, 1904), Tomlin, 1931: 440. Barnard, 1958: 150.*Cythara ima* Bartsch, 1915, Tomlin, 1931: 440. Barnard, 1958: 150.*(non) Mangilia septangularis* (Montagu), Sowerby, 1892: 7.

Additional record: Olifantsbos, west coast of Cape Peninsula.

**Cythara deliciosa* Barnard, 1958*Cythara deliciosa* Barnard, 1958: 151, fig. 24.

Compare *Mangilia ichthys* Melvill, 1910: 13, off Mekran coast (Persian Gulf), 90 fathoms, with 6 ribs.

**Cythara amplexa* (Gould, 1860)*Mangilia amplexa* Gould, Barnard, 1958: 151.

Radula with 28 pairs of short, dagger-like teeth, with ovoid base and process. The structure of the radula indicates that this species should be placed in the genus *Cythara*.

Additional record: $34^{\circ} 02' S.$ $23^{\circ} 28' E.$, 27 fathoms, Lüderitzbucht, living.

* The genus *Cythara* has been rejected as a *nomen dubium* (Powell, 1942). *C. alfredi* and *amplexa* have been placed in the genus *Anacithara* (Hedley, 1922). *C. deliciosa* Barnard should be placed in the genus *Eucithara* (Fischer, 1883)—ED.

Mangilia tranquilla Barnard, 1958

Mangilia tranquilla Barnard, 1958: 158, fig. 28b.

Additional record: Keiskamma Point, NE. \times E. 5 miles, 33 fathoms, one dead (S.A.M., Pieter Faure collection).

? *Mangilia* sp.

Fig. 5j

Description: Protoconch 2 whorls, smooth ? (worn). Post-natal whorls 5. Axial pliculae on 1st whorl ? 14 (partly worn), on 2nd, 3rd and 4th whorls 15, on 5th 16, sigmoid, starting from the suture above, evanescent on lower part of whorls, and on base. Crossed by fine spiral lirae, 7-8 on 2nd whorl, 9-10 on 3rd, 15 on 4th and about 17 on 5th; about 18 additional lirae on base. No shoulder; no sulcus; lip sinus as indicated by the pliculae, deep. Spire longer than aperture (about $1\frac{1}{4}$ times). Shell 8.2×2.5 mm. White, a very faint brown band slightly below middle on last whorl, seen better on inside of aperture than on outside of outer lip.

Locality: Simonstown (one, somewhat worn).

Daphnella sulcata (Sow., 1892)

Daphnella sulcata (Sowerby), Barnard, 1958: 160, fig. 30b.

Delete from localities: off Cape Vidal, 80-100 fathoms, one broken. See below: *Mitromorpha* n.sp.

Daphnella ? sulcicancellata (Barnard, 1958)

Surcula sulcicancellata Barnard, 1958: 145, fig. 22c.

Description: Protoconch corroded. No operculum. Radula with 16 pairs of dagger-like, unbarbed teeth. Animal pale, tentacles short, blunt, eyes?

Locality: Off Cape Point. 200 fathoms. 7 specimens, 3 alive. In collection Mrs. H. Boswell.

Remarks: The absence of an operculum, and the dagger-like radula teeth necessitate transferring this species to one of the cytharine genera. Quite provisionally *Daphnella* is here chosen, chiefly because of the likeness between the shell of the present species and that of *Daphnella* (?) *verecunda* Barnard, 1963b. This species differs from the latter in having more axial ribs (18-21 as against 12-15) and more spiral lirae on base (18-20 as against 15).

Daphnella alfredensis Bartsch, 1915

Fig. 7b

Daphnella alfredensis Bartsch, Turton, 1932: 30. Barnard, 1958: 161. See also *Columbella capensis* (Sowerby), *infra* p. 635.

No operculum, radula with about 33 rows.

Additional records: Gordons Bay, 2 (length 10 mm). S.A.M. A29965. Gonubie, East London, 2, alive. S.A.M. A29938.

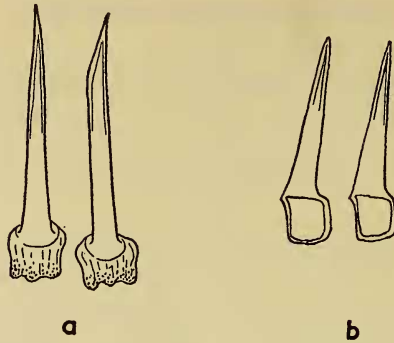


FIG. 7. Radulae of: a. *Daphnella* (?) *sulcicancellata* (Brnrdr). b. *D. alfredensis* Bartsch.

'Pleurotoma' curricula n.sp.

Fig. 8

Description: Shell thin. Protoconch $1\frac{1}{2}$ or 2 whorls, corroded. Post-natal whorls 4; 1st corroded; 2nd, 3rd and 4th with a narrow cingulum projecting beyond the incised suture; about 22-34 axial pliculae (or enlarged growth-lines), strongly sigmoid, concave in sulcus, protractive below, each plicula forming a small point on the cingulum; pliculae evanescent on base. On 2nd and 3rd whorls 5, on 4th whorl 6 spiral grooves often crossing the pliculae, but more distinct between them; about 15 grooves on base. Sinus in profile straight; a slight shoulder where the pliculae become protractive.

Shell 8.5×3.75 mm. White, somewhat translucent.

Locality: $34^{\circ} 36' S$. $17^{\circ} 00' E$., 1500-1760 fathoms. One dead but fresh, 2 broken.

Type: S.A.M. A9859.

Remarks: There is a superficial resemblance to *Pleurotoma truncata* Schepman, 1913, and *Drillia rubidofusca* Schepman, 1913, both of which have a narrow cingulum; but both of them have axial ribs, at least on the earlier whorls, whereas in the present specimens the axial sculpture consists of enlarged growth-lines, which at most form pliculae and can scarcely be called ribs.

Pleurotomella ida Thiele, 1925

Pleurotomella ida Thiele, 1925: 230, pl. 40, fig. 21.

Description: Aperture subequal to spire. Protoconch 3 whorls, altitude and diameter 0.5 mm, with criss-cross sculpture. Post-natal whorls 5. Axial ribs 10 on 1st and 2nd whorls, 11 on 3rd and 4th, 12 on 5th, crossing sulcus and continued on base; crossed by 2 spiral lirae, intersections rather sharply nodulose; on 3rd and following whorls a fine lira between the 2 main ones, on 4th another fine lira between lower main lira and suture; on base about 12 lirae, the uppermost one (at top of aperture) the strongest. Canal longer than in Thiele's figure. Lip sinus adjoining suture. Suture undulate, the axial

ribs on one whorl alternating with those on whorl above. Shell 8×4 mm. Thiele: $5 \times 2 \cdot 7$ mm.

Localities: $35^{\circ} 19' S.$ $20^{\circ} 12' E.$, 126 metres (Thiele), $34^{\circ} 3' S.$ $25^{\circ} 10' E.$ (St. Francis Bay), 24–34 fathoms, one dead. (S.A.M. A29766, Pieter Faure collection).

Remarks: This specimen shows my suggestion (1958: 118) that *ida* was the juvenile of *Philbertia capensis* to have been incorrect. The two species are clearly differentiated by having two (*ida*) and three (*capensis*) spiral keels.

Mitromorpha volva Sow., 1892

Mitromorpha hewitti Tomlin, Barnard, 1958: 162.

There is little doubt that both *hewitti* Tomlin, 1921 and *striolata* Turton, 1932 should be regarded as synonyms of *volva* Sowerby. Smith (1904: 31) said the typical form of *volva* 'usually' had 5 lirae on the penultimate whorl; Tomlin said 5–7; the variety later named *hewitti* has 4; Turton's figure (front view) of *striolata* shows 7 on the penultimate, 8 on the last whorl, and 12 on the base.

The two East London specimens recorded in 1958 (p. 163) have 4 lirae, and 16 on the base; there is also a broken specimen with 4 + 17 lirae. Four Pondoland specimens (*ex* Dr. Becker) have 4 + 17, 4 + 18, 5 + 15, and 6 + 15 lirae.

Apart from possible variation in the number of the lirae, the number of visible lirae depends on the variable extent to which one whorl overlaps the preceding whorl; and this is scarcely a satisfactory feature on which to base specific distinctions.

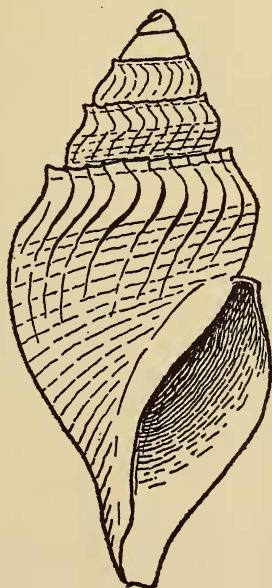


FIG. 8. '*Pleurotoma*' *curricula*
n.sp.

The colour, uniform brown, or pale brown with darker spots, is also not a satisfactory distinction.

? *Ptychosyrinx* sp.

Fig. 9

A very worn shell, for which Tomlin declined to suggest any identification, is so distinctive among the known South African shells that it is worth a figure and some comparisons.

Description: Shell 8.3 mm × 4 mm. Four whorls are traceable. The last whorl shows a slight cingulum below the suture; shoulder well marked but not lirate followed by 5-6 weak spiral lirae, and then a strong lira about midway between shoulder and end of anterior canal, no lirae visible below this. No indication of axial ribs, but there are 2 or 3 very faint indications of possible granules on the shoulder. No sinus is visible, but the space between the subsutural cingulum and the shoulder is slightly concave. Growth-lines are not traceable. Columella without pleats.

Locality: Off Cove Rock (East London), 22 fathoms.

Type: S.A.M. A3528.

Remarks: The figures of *Latirus belcheri* (Rve) and *L. cingulifera* (Lamarck) in Chenu, 1859, figs 912 and 913, closely resemble the present shell. These, however, have an undulate periphery, pleats on the columella, and no cingulum. Moreover the present shell seems to have the facies of a turritid.

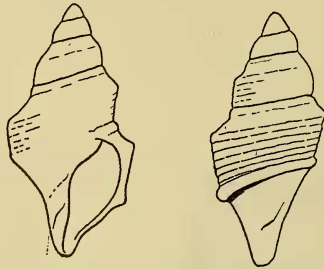


FIG. 9. ? *Ptychosyrinx* sp.

The west African *Pleurotoma spirata* Lamarck is somewhat similar but has no cingulum, and the shoulder is lirate, more or less sharply costate, and much nearer to the suture; there are no spiral lirae below the shoulder; there is no lower lira, the profile showing only a rounded angularity.

A figure closely resembling the present shell is fig. 11 of a 6.5 mm long fragment of *Pleurotomella annulata* Thiele (1912: 217, pl. 14) but fig. 10 of the whole shell is not so similar.

An even closer resemblance is the figure of a Tertiary Japanese fossil in Powell, 1964: 293, *Ptychosyrinx hyugaensis* (Shuto). This has blunt nodules on the peripheral lira on the early whorls, but obsolete on the body whorl. The

blunt biangulation of the body whorl is not so strongly marked as in the present shell. This biangulation is reminiscent of *Turris (Ptychosyrinx) lobata*. But in this species the strongly gemmate shoulder lira is more prominent than the basal lira. Even allowing for the greater abrasion on the shoulder than on the other parts, the lirae between the shoulder and the basal lira exclude the present shell from being a very worn young *lobata*.

RHACHIGLOSSA

Fam. Marginellidae

A large family with numerous species, many of which require anatomical investigation. Four patterns of radulae are known:

1. *Marginella sensu stricto*: Moderately wide, transversely oblong plates, with several denticles or cusps on the hind margin.
2. *Marginellona* (East Indies); *Afrivoluta* (South Africa): Very wide plates with very many denticles on the hind margin.
3. *Persicula*: Narrow, crescentic plates, concave in front, with a few denticles on the hind margin.
4. *Diluculum*: Narrow, V-shaped plates, concave in front, with a single large cusp on the hind margin.

The South African fauna list contains about 110 names of so-called species of '*Marginella*' which have been founded on the shells alone (Turton's 1932 and 1933 names are excluded). Some are already recognized as synonyms, and some are misidentifications. The radulae of only seven are known. These seven species fall into the following genera:

Marginella: *biannulata*, *capensis*, *cystiscus*,* *lucida*, *zeyheri* (*zeyheri* requires confirmation).

Afrivoluta: *pringlei* (radula like that of *Marginellona*).

Persicula: Two very small species with shells like those of *Marginella pseustes* and *M. aphanospira* (confirmation is required).

Diluculum: *inopinatum*.

There is thus a very wide field for investigation among the South African species of '*Marginella*'. There may be species with radulae differing from the above-mentioned four patterns. Cooke (1895) has already suggested, for evolutionary reasons, that a marginellid radula may be found with lateral plates in addition to the central (rhachidian) plate.

There seems to be a possibility that some species may have an entirely different method of feeding; not by means of a protrusible rasping radula, but by means of a suctorial structure. As indications of such a method, whole animals of some species have been dissolved in KOH without finding any trace of a radula. This, however, is not conclusive; section-cutting will be the final

* The genus *Cysticus* was described by Stimpson in 1865. This animal differed only in the shape of the tentacles. According to Thiele (1931) the shell is identical to *Marginella* and the radula only slightly different—Ed.

test. Species which appear to have no radula are:

<i>rosea</i>	}	several examples of each examined
<i>musica</i> (<i>diadochus</i>)		
<i>neglecta</i>		
<i>cylindrica</i>		
<i>bairdowi</i>	}	one example of each examined.
<i>nebulosa</i>		

Later research, of course, may show that many 'Marginellas' are acceptable as species; but several will always remain as mere names.

From this point of view the discussion of synonymies of 'species' based on shells is not very profitable. The following notes on specimens, however, may be useful.

Marginella capensis Krauss, 1848

Marginella capensis Krauss, Barnard, 1959: 3.

Marginella puella Gould, 1860: 385.

(In my reference to Krauss read: p. 125, not 25.)

Additional records: False Bay, 52 fathoms. Lüderitzbucht.

Marginella biannulata (Fabr., 1826)

Marginella biannulata (Fabricius), Barnard, 1959: 4.

Lucas (1913) records a sinistral specimen of *zonata* from Cape Town.

Additional record: Lüderitzbucht.

Marginella musica Hinds, 1844

Marginella musica Hinds, 1844*b*, Barnard, 1959: 5.

Additional record: 26° 37' S. 15° 4' E., 35 metres, living.

Marginella neglecta Sow., 1846

Marginella neglecta Sowerby, Barnard, 1959: 7.

Additional record: Olifantsbos (west coast of Cape Peninsula). Animal white.

Marginella bensoni Rve, 1865

Marginella bensoni Reeve, Tomlin, 1917: 253. Barnard, 1959: 7.

Marginella dulcis Smith, 1904: 32, pl. 2, fig. 30.

Tomlin unhesitatingly placed *dulcis* Smith as a synonym of *bensoni* Reeve on conchological grounds. As the type of the latter is lost, the comparison was made between shells of *dulcis* and the description and figure of *bensoni*. Such a comparison is unsatisfactory and the synonymy were better not accepted.

The type of *bensoni* being lost, the taxonomic status of this 'species' can never be determined; it is a *species delenda*. On the other hand *dulcis* is said to be common (Turton, 1932) at the type locality, and therefore the possibility exists of obtaining living specimens and examining the radulae; it is a *species inquirenda*.

Additional record: Olifantsbos (west coast of Cape Peninsula).

Marginella nebulosa (Röding, 1798)*Pterygia nebulosa* Röding, 1798: 51.*Marginella nebulosa* (Röding), Tomlin, 1917: 283.

Localities and records: Port Elizabeth (Sowerby); Port Alfred (Bartsch, Turton). Off Cape Infanta, 42 fathoms, one (South African Museum, Pieter Faure collection); Sebastian Bay, 30–40 fathoms, one (S.A.M., A6382, collected by K. H. Barnard, 1922); Simon's Bay (False Bay) 2 fathoms, one (S.A.M., A8764, collected by F. H. Talbot).

Measurements of False Bay examples: 34° 43' S. 18° 35' E., 44 metres; with thickened outer lip, 38 × 21, 39 × 21, 40 × 21 mm; also A8764 31 × 17 mm; with thin outer lip, 30 × 15, 29 × 14.5 mm. Sebastian Bay, with thickened lip, 44 × 24 mm.

Marginella lineolata Sow., 1889*Marginella lineolata* Sowerby, 1889: 9; 1892: 19. Tomlin, 1917: 276.

Localities: False Bay, 51 fathoms, one; off Great Fish Point, 51 fathoms, one (South African Museum, Pieter Faure collection). 34° 29' S. 21° 49' E., 40 fathoms, 2 (University of Cape Town).

The P.F. specimens are somewhat faded or discoloured by the preserving fluid. The U.C.T. specimens measure 29 × 16, and 27 × 14 mm. The former is grey and has a thick outer lip, the latter yellowish with a thin lip; both have fine axial zigzag lines and two irregular spiral series of black dots.

Marginella differens Smith, 1904*Marginella differens* Smith, 1904, Barnard, 1959: 8.

This is also at present only a species name, although the type is available for comparison. Living specimens will perhaps be obtained at the type locality, Port Alfred.

It may be suggested that the Port Elizabeth shell identified by Sowerby in 1892 as *inconspicua* Sow. may have been *differens*. *M. inconspicua* Sowerby (1846: 387) was described from an unknown locality. It was pale fulvous, with a low spire and four pleats, 5 mm.

If the radula of *differens* became known, and if the identity of *differens* and *inconspicua* were accepted on conchological grounds, even so the sinking of *differens* in favour of *inconspicua* could not be justified.

**Marginella keenii* Marrat, 1871*Marginella keenii* Marrat, Turton, 1932: 37. Barnard, 1959: 9.*Marginella electrina* Sowerby, 1892: 21.*Marginella electrum* von Martens, 1903: 37 (quoted as *electrum non* Reeve).

* These species are here considered to be synonymous, but *M. electrina* normally has a more acute spire and a narrower base than *M. keenii*, and three columella pleats, not four as in *keenii*. The range of *M. keenii* is from Port Alfred to Umzamba, and is very common at East London. *M. electrina* extends from Table Bay to East London.—Ed.

Marginella epipolia Tomlin, 1921

Marginella epipolia Tomlin, 1921: 216.

The type, from off Sebastian Bluff, 24 fathoms, came originally from the Pieter Faure collection which was sent to Sowerby; it should have been returned to the South African Museum, but is now in the Tomlin collection, National Museum of Wales, Cardiff.

There is, however, in the South African Museum a topotype from the same Pieter Faure haul, measuring 14×8 mm, with thin outer lip, and markings similar to those of the type. A specimen of the same size as the type, and with thickened outer lip, was taken at the same locality in 27 fathoms. The grey spiral lines are distinct on the base, but below the shoulder the pattern is more patchy, as in *rosea* or *bairstowi*. A similar pattern is found in the larger specimen 23.5×13 mm from off Cape St. Blaize.

These last two may perhaps be referable to *rosea*, but much more material is necessary for a decision.*

Marginella zeyheri Krauss, 1848

Marginella zeyheri Krauss, Barnard, 1959: 10.

The University of Cape Town has taken three specimens (one damaged from which the radula was extracted) at $33^{\circ} 6' S. 17^{\circ} 49' E.$ in 48 fathoms. The two undamaged shells measure 6×3.5 and 6×3 mm. The greater width of the one is due to a greater thickening of the outer lip. This one resembles a typical *zeyheri*, whereas the narrower one is more like *atractus*. They are obviously conspecific, and must be identified as *zeyheri*.

Neither *zeyheri* nor *atractus* have been recorded from the west coast, although 'In litore capensi legit C. Zehyer' (Krauss) could have included Table Bay. Zeyher probably collected on the shores of both Table Bay and the east coast of the Cape Peninsula (Muizenberg to Simonstown).

The radula of the damaged specimen has about 35 rows. The plates are narrower than in *capensis* and *biannulata* (Barnard, 1959: fig. 1) and the hind-margin projects angularly backwards; the central cusp is the largest, and is flanked on either side by two smaller cusps, with a minute denticle between each pair of cusps. Further specimens are desirable for confirmation.

Diluculum inopinatum Barnard, 1962

Diluculum inopinatum Barnard, 1962: 14.

Additional records: Saldanha Bay, Kommetjie (west coast of Cape Peninsula), Lüderitzbucht, 160 metres.

Remarks: The identity of the specimens from Kommetjie and Lüderitzbucht was confirmed by the radulae. The occurrence of this species at two localities

* The absence of the characteristic sirus in the posterior outer lip in *M. epipolia* appears to distinguish this species from *M. rosea*.—ED.

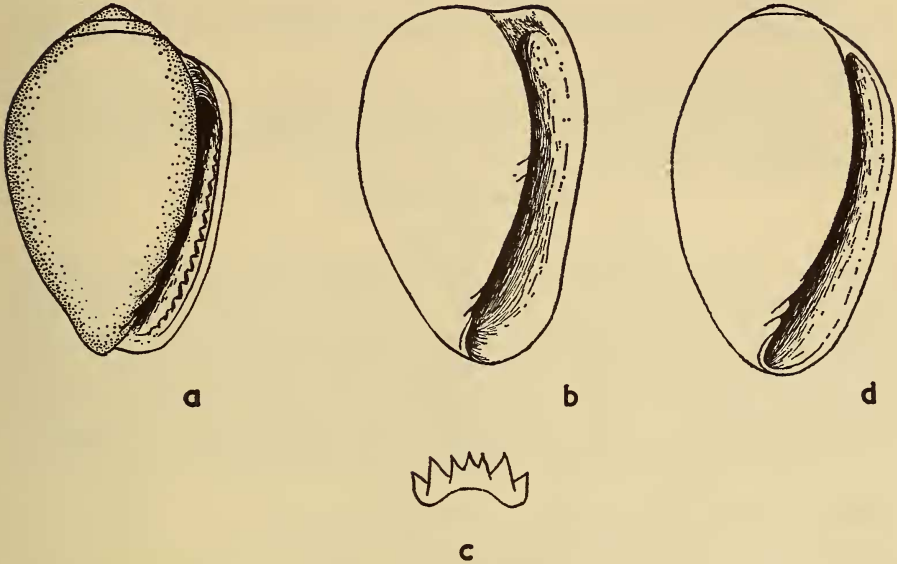


FIG. 10. a. *Marginella differens* form *eugenes* Brnrd. b. *Persicula nigrocrocea* Brnrd. c. *P. nigrocrocea* radula d. *P. alborubida* Brnrd.

on the west coast of the Cape raises the suspicion that the '*bensoni*' shell from Green Point, Cape Town, was conspecific.

Type: Holotype in the Department of Zoology, University of Cape Town, paratypes in the South African Museum.

Persicula nigrocrocea n.sp.

Fig. 10b, c

Description: Shell resembling that of *Marginella aphanospira* Tomlin, 1913. Columella pleats 4, upper two barely visible. 3×2 mm.

Animal: Foot, body, tentacles, and mantle edge orange; mantle within the shell black, eyes red. Radula with at least 80 plates; plates crescentic, anterior margin concave, but not so strongly as in *P. persicula* (Thiele, 1929, fig. 425), 7 denticles, the median one very slightly larger than the others.

Locality: Simonstown.

Types: Holotype, S.A.M. A30049, paratype S.A.M. A30549.

Remarks: These shells would undoubtedly be identified by conchologists as *aphanospira*. This species is, however, known only from its shell, and is therefore a 'conchological' species. It must always remain so. Although the present living specimens might reasonably be assumed to be conspecific with *aphanospira*, nevertheless there could be no certainty. Strictly speaking it would be unscientific.

The institution of a new name therefore seems preferable and justifiable, the species being trebly diagnosed by the coloration of the animal, the shell, and the radula.

Tomlin assigned his species to the *persicula* group of marginellids. The form of the radula amply justifies the classification of *Persicula* as a full genus, as did Thiele (1929).

Persicula alborubida n.sp.

Fig. 10d

Description: Shell resembling that of *pseustes* Smith 1904. Columella pleats 3, with sometimes a trace of a 4th pleat. 2×1.3 mm (or a trifle over 2 mm long).

Animal: Foot, body, tentacles, and mantle edge translucent white, foot behind shell with a medio-dorsal opaque white line, mantle within the shell black with one or two white spots in the middle, proboscis orange-red, eyes black. Radula with at least 100 plates; plates crescentic, anterior margin concave, 5 cusps, the median one largest, the outermost one on each side small.

Locality: Kommetjie (west of Cape Peninsula).

Types: Holotype S.A.M. A30050, paratype S.A.M. A30550.

Remarks: The same remarks apply to this species as to '*nigrocrocea*' in justification of a new specific name.

Fam. **Volutidae**

Voluta ponsonbyi Smith, 1901

Voluta ponsonbyi Smith, Barnard, 1959: 20.

In 1959 (p. 19) I suggested that the young specimen recorded by Sowerby (1897), if South African, was far more probably an *africana* or a *ponsonbyi* than a *festiva*. Having now seen Sowerby's figures in his *Thesaurus* (1: 218) I think it is probably *ponsonbyi*.

In my remarks, for 'protoconchs' read: species. Smith did in fact give the sizes of the protoconchs.

Volutocorbis abyssicola (Ad. & Rve, 1848)

Volutocorbis abyssicola (Adams & Reeve), Barnard, 1959: 25.

The largest specimen I have seen was 108×46 mm, said to have been trawled in the Saldanha Bay area.

Fulgoraria blaizei Barnard, 1959

Fig. 11

Fulgoraria blaizei Barnard, 1959: 28.

Description: Apex broken, 5 whorls remaining. Axial ribs 19 on 2nd and 3rd whorls, about 20 on 4th whorl, but becoming evanescent; 3rd, 4th and 5th whorls with growth-lines; fine close-set spiral striae on 1st to 3rd whorls, becoming evanescent on 4th, obsolete on 5th. An obscure columellar pleat.

Rostrum and anterior part of outer lip broken. Rostrum and anterior part of base minutely crenulate. Shell 96×35 mm. Buff, orange-buff ('rusty') on back of outer lip.

This shell may possibly be the adult of *blazei*, but the spiral striae continue on to the 3rd or 4th (remaining) whorl.

Locality: Unspecified area off Natal coast. In collection of Mrs. H. Boswell, Pretoria.

Fusivoluta pyrhostoma (Watson, 1882)

Fusivoluta pyrhostoma (Watson), Barnard, 1959: 29.

Description: Protoconchs removed from egg-capsules taken in False Bay in 1959. The 2nd whorl of the protoconch has minute spiral striae, and faint indications of axial riblets towards the outer lip. There are no unworn juveniles of *F. pyrhostoma* available. These protoconchs appear to agree with apices (\pm corroded) of older shells, in size, spiral striae, and sigmoid pliculae.

Fusivoluta pyrhostoma (Watson)

form *major* Barnard, 1959

Fusivoluta pyrhostoma (Watson) form *major* Barnard, 1959: 30.

Description: Protoconch altitude 4, diameter 3 mm; post-natal whorls 6, first 2 whorls corroded, 3rd partially so. Axial ribs on 3rd whorl ?, 24 on 4th, 25 on 5th, about 27 on 6th but less well defined on back of outer lip. Shell 72×26 mm. Another specimen from same area, 82×29 mm.

Locality: Saldanha Bay, 200 fathoms.



FIG. 11. *Fulgoraria blazei*.
Barnard.

Fam. Mitridae

Gen. CHARITODORON Tomlin, 1932

Charitodoron Tomlin, Barnard, 1959: 144.

The genus *Charitodoron* Tomlin has been transferred from the Buccinidae to the Mitridae, and regarded as a subgenus of *Mitra* (Barnard, 1960: 402).

Mitra picta Rve, 1844

Mitra picta Reeve, Barnard, 1959: 41.

Additional record: Kommetjie, west coast of Cape Peninsula. Radula as in *M. aerumnosa*.

Mitra aerumnosa Melv., 1888

Mitra aerumnosa Melvill, Barnard, 1959: 41.

Additional record: Lüderitzbucht (U.C.T.).

Mitra (Strigatella) litterata Lam., 1811

Mitra (Strigatella) litterata Lamarck, Barnard, 1959: 44.

Recorded from the post-Pliocene of Inhambane by Cox, 1939.

Mitra rufescens A. Ad., 1851

Mitra rufescens A. Adams, 1851, Barnard, 1959: 46.

Additional record: Delagoa Bay.

Pusia patula (Rve, 1845)

Pusia patula (Reeve), Barnard, 1959: 57.

Additional record: Lüderitzbucht. Also recorded as a fossil from Algoa Bay.

Fam. Olividae*Ancilla fasciata* Rve, 1864

Ancilla fasciata Reeve, Barnard, 1959: 69.

Additional records: 27° 54' S. 33° 3' E., 51 metres. Also recorded as a fossil from Algoa Bay.

Fam. Fasciolariidae*Latirus rousi* Sow., 1886

Fig. 12c

Latirus rousi Sowerby, Barnard, 1959: 81.

Additional record: Simonstown, alive. Radulae mounted.

Latirus polygonus (L.)

Fig. 12b

Latirus polygonus (L.), Barnard, 1959: 83.

Description: Front of foot, head and tentacles crimson.

Radula with about 260 rows, central plate oblong, broader than long with subequal cusps, lateral plate with 10 cusps, no denticles between the cusps, but a minute denticle at inner corner.

Locality: Several examples were found living at Umzikaba (north of Port St. Johns) by Dr. F. H. Talbot of the South African Museum in 1959.

Latirus clausicaudatus (Hinds, 1844)

Fig. 12a

Latirus clausicaudatus (Hinds), Barnard, 1959: 83.

Description: Radula with about 155 rows; central plate oblong, broader than long, with 3 feeble cusps (not extending beyond hind margin of plate), lateral plate with 9 cusps (excluding the internal one), a gap between the 9th cusp and the denticle at the outer end of the plate; some of the cusps more or less reduced to denticles.

Additional record: 34° 3' S. 25° 59' E., 46 fathoms, one living.

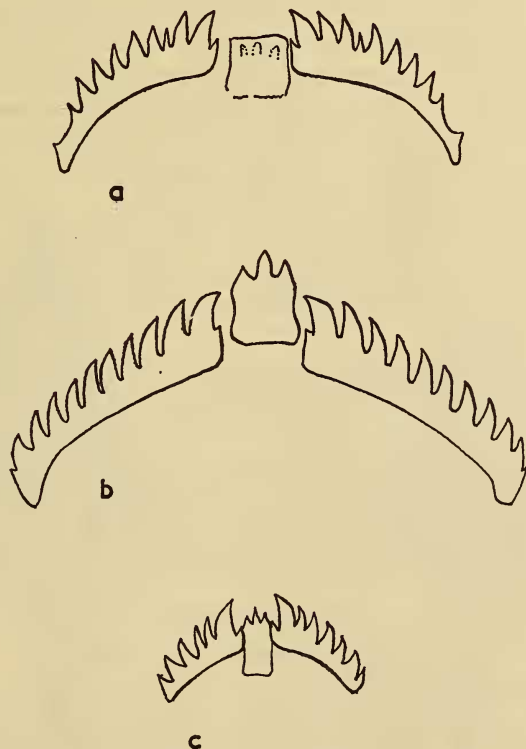


FIG. 12. Radulae of: a. *Latirus clausicaudatus* (Hinds).
b. *L. polygonus* (L.). c. *L. rousi* Sow.

Fusus rubrolineatus Sow., 1870

Fusus rubrolineatus Sowerby, Barnard, 1959: 93.

The difference in the opercula of *rubrolineatus* and *rufinodis* was not mentioned in my remarks on these species (p. 94): according to Von Martens' (1903) figure (10a) the apex is curved slightly inwards, whereas in *rubrolineatus* it is slightly on the outer side of the oval operculum. Probably this small difference is accidental and without significance.

Fusus bonaespei Barnard, 1959

Fig. 13b

Fusus bonaespei Barnard, 1959: 95.

Additional record: St. Francis Bay, 30–40 fathoms, 90 mm, East London Museum.

A figure of the complete shell is now given.

Fusus cf. *retiarius* von Martens, 1903

Fig. 13c

Fusus cf. *retiarius* von Martens, 1903: 104, pl. 2, fig. 4.

Description: Protoconch plus 6 post-natal whorls. Axial ribs 12 on first whorl, increasing to 15 on the 6th. Spiral sculpture as in *rubrolineatus*. Snout broader than in *rubrolineatus*, straight, not flexuous; canal more definitely marked off from rest of aperture (i.e. indent in outer lip more marked). Columella slightly angular at the bend; interior of outer lip with 8–9 pliculae. Shell 39 × 17 mm.

Operculum oval-round, apex towards outer margin.

The ribs are slightly paler, and the 3 spiral lirae in the intervals between the ribs are slightly darker than the rest of the shell.

Radula like that of *rubrolineatus*, 165 rows, lateral plate with 6 cusps.

Locality: 34° 21' S. 25° 4' E., 110 metres. A single living specimen, taken by the University of Cape Town, has a shell much plumper than the normal *rubrolineatus*.

Remarks: The present specimen closely resembles the figure of *retiarius*, more so than it does the typical *rubrolineatus* or the figure of *rufinodis* von Martens (1903: 103).

The single dead shell from East Africa (1° 49' N. 45° 29' E., 1134 metres), described as possibly a *Fusus*, was stated by von Martens (1903) to have 7 whorls; 6 are shown in the figure, with a broken apex; 40 × 15.5 mm; 12 axial ribs on last whorl, 11 on the penultimate.

Fam. **Nassidae***Nassa analogica* Sow., 1903

Nassa analogica Sowerby, Barnard, 1959: 99.

Animal from Glencairn: trifasciate, animal whitish, foot, siphon, and tentacles greyish, eyes black. Spiral lirae visible through the periostracum when in water.

* The genus *Nassarius* Duméril, 1806 is used by most authors.—Ed.

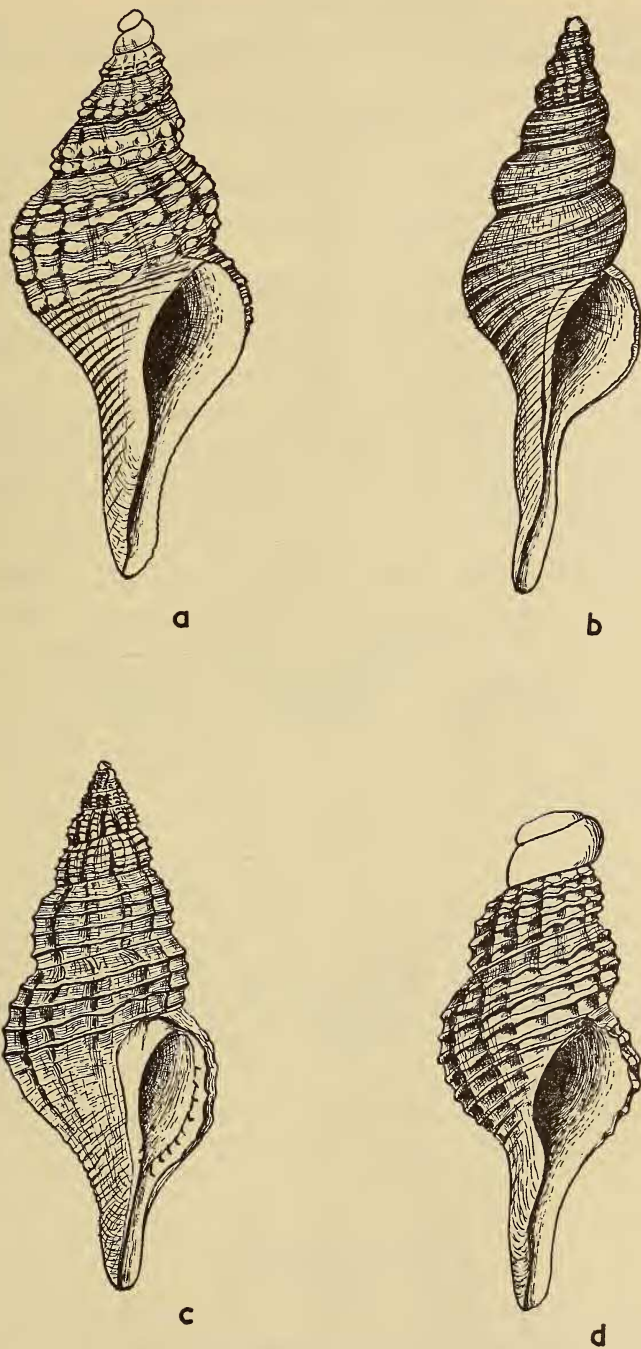


FIG. 13. a. *Fusus afurei* Brnrd. b. *F. bonaspei* Brnrd. c. *F.* cf. *retarius* von Martens. d. *F. africanae* Brnrd.

Nassa capensis (Dunker, 1846)*Nassa capensis* (Dunker), Barnard, 1959: 103.Operculum oval, margins entire, as in *kochiana*. Radula as in *kochiana*.*Nassa horrida* (Dunker, 1847)

Fig. 14a

Buccinum horridum Dunker, 1847: 59.*Nassa horrida*: Sowerby, 1897: 5.*Nassarius horridus*: Tomlin, 1928: 318. Peile, 1936: 141.*Nassarius* (*Scabronassa*) *horridus*: Peile, 1939: 276.

Description: Radula with about 60 rows. Central plate with 20 cusps, graduated in length from centre outwards; no intermediate plate; lateral plate subtriangular, the distal margin (hypotenuse) divided into 8 cusps, the inner one blunt, the others pointed, which are curved over backwards.

Remarks: Peile described the lateral plate as a basal column expanded into 2 groups of 4 cusps; and his figure shows a basal projection in addition to the blunt basal cusp. Possibly his figure was drawn from two overlapping plates. In my specimen the lateral plate when isolated and flattened out is a simple triangle in shape.

Localities: Durban (Sowerby, Tomlin), Chaka's Rock (R. N. Kilburn, 1963).



a



b



c

FIG. 14. Radulae of: a. *Nassa horrida* (Dunker).
b. *Nassa fenestrata* Marrat. c. *Demoulia retusa* (Lam.).

Nassa plicatella A. Ad., 1851

Nassa plicatella A. Adams, 1851b, Barnard (*pars*), 1959: 114. (Not the Langebaan specimens nor the description of the operculum and radula.)

On page 115 (Barnard, 1959) delete: 'Operculum . . . margins', and 'Langebaan . . . (U.C.T.)' (see *scopularcus*, *infra*).

N. angolensis Odhner, 1923: 14, pl. 1, figs 6, 7 seems to be a juvenile *plicatella*. The operculum and radula of the true *plicatella* are not known to me. Odhner did not describe the operculum of *angolensis*.

Nassa scopularcus Barnard, 1959

Nassa scopularcus Barnard, 1959: 120; 1959: 115, *plicatella* (*non* A. Adams *pars*; the Langebaan specimens).

Further specimens from the type locality, and collected at the same time by Dr. Haughton, have recently (1961) become available in the South African Museum palaeontological collections (number 11352). These agree with the living specimens from Langebaan (Saldanha Bay) which were identified as *plicatella*. The species therefore is not extinct. It is questionable whether the Bogenfels clays from which Dr. Haughton collected the specimens are as old as Late Tertiary.

Description: The original description, in general, holds good. There are 5-6 post-natal whorls. There seem to be 12 (13) axial ribs on the 2nd whorl, decreasing to 11 on 3rd, 12-14 on last whorl, but towards end of latter on back of outer lip the strong ribs are succeeded by several less prominent and more closely aggregated ribs representing lip thickenings at successive stages of growth; the position of the main ribs, however, is indicated by undulations on the upper sutural margin of the whorl. Spiral lirae crossing the ribs, 6 on 3rd whorl, 7 on 4th, 8 on 5th, 9 on 6th, with additional ones on base.

Cream or greyish, darker in the intervals between the ribs when wet, uniform when dry; anterior canal pale (not purplish-brown as in *speciosa*).

Radula with 70 to 75 rows, central plate with 10 cusps, no intermediate plate, lateral plate without denticles between the two cusps.

Operculum triangularly oval, serrate on both margins. Up to 20 × 11.5 mm. All the shells are proportionally broader than the type, but somewhat variable; e.g. 13 × 8 and 14 × 8 mm.

Remarks: Distinguished from *plicatella* by fewer ribs; however, if the operculum and radula of *plicatella* correspond with those of *scopularcus*, the latter may eventually be shown to be merely a variant of *plicatella*.

Nassa rhysonopia n.sp.

Fig. 15a

Description: Juvenile, protoconch $2\frac{1}{2}$ whorls, with axial pliculae, about 24-25 on the 2nd whorl. Post-natal whorls 2. Spiral lirae 4, the subsutural one feeble, the other 3 strong; axial riblets about 25, forming slight nodules on the lirae,

but distinct in the intervening grooves, producing especially in the worn specimens a punctate appearance; on base 3 additional lirae. Columella sinuous, canal well marked. Shell 2.2×1.5 mm; two other specimens 3.2 mm long.

Locality: Cove Rock, East London. 22 fathoms, 2 (type and paratype), $34^{\circ} 5' S$. $25^{\circ} 55' E$., 67 fathoms, one. Cape Infanta, 46 fathoms, one. Gericke Point (Knysna area) 46 fathoms, one.

Type: Holotype S.A.M. A29990, paratype S.A.M. A30551.

Remarks: All the specimens are juvenile; the two from off Cove Rock are in good condition, the others from localities further west are worn. They seem to be referable to the genus *Nassa*, although the distinctive wrinkled protoconch differs from those of other species, so far as literature and material is here available.

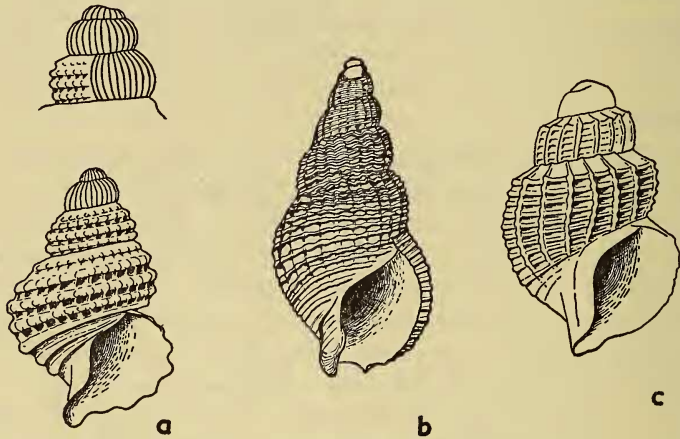


FIG. 15. a. *Nassa rhysonopia* n.sp. Protoconch further enlarged. b. *Nassa muri* Brnd. c. *Euthria ? fallax* Thiele.

Powell (1951, fig. N 117) figured the protoconch of *Pleurotomella simillima* Thiele with 2 axially plicate whorls; the original description (Thiele, 1912) stated that the apical whorls were smooth. But see Powell (1951: 172) for replacement of a sculptured sinusigera protoconch by a smooth 'internal case' (Powell quotes Dall, 1889).

Nassa fenestrata Marrat, 1877

Fig. 14b

Nassa fenestrata Marrat, Barnard, 1959: 111.

Operculum broadly subtriangular, broader than long, serrate on both margins.

Radula 60 rows. Central plate with 11 cusps, the outermost one on either

side very small; intermediate plate present, lateral plate without denticles below cusps.

Demoulia abbreviata (Gmelin, 1791)

Demoulia abbreviata (Gmelin), Barnard, 1959: 122.

Additional record: Saldanha Bay, living (U.C.T.).

Demoulia retusa (Lam., 1816)

Fig. 14c

Demoulia retusa (Lamarck), Smith, 1891c: 321 Barnard, 1959: 122.

Description: Nucleus of protoconch missing, apparently $1\frac{1}{2}$ whorls but junction with 1st post-natal whorl indistinct, the spiral lirae distinguishing the latter beginning very gradually.

Operculum present. Triangularly ovoid, altitude 6, width 5 mm. Both margins irregularly serrate. On another specimen the scar of the operculum was clearly present.

Radula with 75–85 rows. Central plate with 9–10 cusps, lateral plate as in *abbreviata*.

Additional records: East London, 2 specimens, shells 20 and 17 mm. False Bay, animal pale orange.

Bullia trifasciata Smith, 1904

Bullia trifasciata Smith, 1904, Barnard, 1959: 127.

Radula about 60 rows, central plate with 11 cusps. Lateral and inner cusp with 2 prongs.

Operculum as in *annulata* (adult) but margins serrate.

Additional records: 33° S. 27° E., 7 metres (U.C.T.), 4 living, one uniform brown, somewhat plumbeous.

Bullia annulata (Lam.) Rve, 1846

Bullia annulata (Lamarck) Reeve, Barnard, 1959: 127.

Additional records: Saldanha Bay, 28 fathoms, dredged, U.C.T. Table Bay.

Fam. **Buccinidae**

Babylonia papillaris (Sow., 1825)

Babylonia papillaris (Sowerby), Barnard, 1959: 147.

Sowerby's figure in the *Thesaurus* (p. 70) shows numerous small spots (*millepunctata*). The locality 'Delagoa Bay, Cape Colony', obviously refers to Algoa Bay.

Cantharus carinifera Küster, 1858

Cantharus carinifera Küster, Barnard, 1959: 150.

Additional records: Umzikaba (S.A.M. A9261), Umhlali (S.A.M. A29967), living. Tomlin's (1922) record of this species from Lüderitzbucht may be the result of an error in labelling in the Kimberley Museum.

Gen. EUTHRIA Gray, 1850

Euthria Gray, Barnard, 1959: 169.

Barnard, 1959: 170, line 5. For 'clathrata' read: *clathratula*. This is not *Buccinum clathratum* Adams & Reeve, 1850, which Sowerby (1897) transferred to *Metula*.

Euthria ? fallax Thiele, 1925

Fig. 15c

Euthria fallax Thiele, 1925: 181, pl. 32 (20), fig. 5, & pl. 46 (34), fig. 25.

Five specimens agreeing with Thiele's description and figure.

Description: Protoconch altitude 0.5, diameter 0.8–0.9 mm; a few feeble axial piculae on the last whorl before its junction with 1st post-natal whorl. The axial ribs extend across the tabulate shoulder to the suture above, but peter out on the base; 14 on last whorl, 14 or 15 on 2nd, but towards end of the latter becoming feeble and irregular. Spiral lirae 5 on 1st whorl, obscure, 6 on 2nd, stronger but subordinate to the axial ribs. Up to 4×2.5 mm.

Localities: 35° 32' S. 18° 20' E., 2750 metres; 35° 19' S. 20° 12' E., 126 metres (Thiele). Cape Point N. 89° E., 36 miles, 700 fathoms, 5 dead (S.A.M. A7420, Pieter Faure collection).

Remarks: Twelve specimens were taken, 7 were sent to Tomlin and are presumably still in the Tomlin collection (National Museum, Cardiff).

There is a sculptural resemblance to *Fusivoluta capensis* (Thiele), which is found in the same area; but the latter has no tabulate shoulder.

Fam. Pyrenidae (Columbellidae)

Pyrene filmerae (Sow., 1900)

Pyrene filmerae (Sowerby), Barnard, 1959: 175.

In 1892 Sowerby identified a Port Elizabeth shell as *Columbella sagena* Reeve; in 1897 he recorded *obtusa* Sowerby from Durban; and in 1900 described *filmerae* from Pondoland. Smith (1906) regarded *sagena* Sowerby, 1892 *non* Reeve as a synonym of *filmerae*.

P. filmerae occurs as far north as Zululand (Barnard, 1959) and since then the South African Museum has received specimens (A29968) from Bazaruto Island. Some of the Natal shells show triangular or trapeziform brown marks as in *obscura* Sowerby, 1832 (Sowerby, 1844, *Thesaurus Conchyliorum* 1, pl. 37, fig. 63). Sowerby identified a Pieter Faure specimen as '*splendidula*' Sowerby, 1844 (Barnard, 1959).

Columbella flava Bruguière was recorded by Krauss, 1848 (as *undata* Duclos) from Natal, and by Sowerby (1892) from Port Elizabeth.

All these species have a similar facies, and a variable colour pattern; and I suggest there is only the one species in South African waters. The name *filmerae* may be retained, leaving for future research the question whether it should become a synonym of *obscura* Sowerby, or the earlier *flava* Bruguière.

Pyrene atrata (Gould, 1860)*Pyrene atrata* (Gould), Barnard, 1959: 180.

The following specimens, although mostly bleached, seem referable to this species:

Off Tugela River, Natal, 65–80 fathoms, 3.

Off Cape Natal (Durban), 54 fathoms, 3.

Off Umkomaas, Natal, 40 fathoms, 7. South African Museum, Pieter Faure collection.

Columbella turturina Lam., 1822

Fig. 16a

Columbella turturina Lamarck, 1822: 296. Sowerby, 1844: 116; 1892: 22. Bartsch, 1915: 234. Macnae & Kalk, 1958: 128.

Radula: with 100–120 rows, central plate wide, lateral plate with 4 cusps.

Locality: Chaka's Rock, Natal; Durban.

'*Columbella*' *adela* Thiele, 1925'*Columbella*' *adela* Thiele, Barnard, 1959: 183.*Columbella kincaidi* Tomlin, 1926: 292.

The white Still Bay shells have the protoconch with fine close-set very oblique (protractive) striae, as described for *kincaidi*; one specimen from Algoa Bay (Pieter Faure collection) is similar.

There is little doubt that the Still Bay shells are only a white variety of the yellowish *adela* (and *kincaidi*); or maybe the translucent fresh shells become opaque yellowish when dead.

'*Columbella*' *brunnescens* Thiele, 1925'*Columbella*' *brunnescens* Thiele, Barnard, 1959: 183.

Description: Protoconch $1\frac{1}{2}$ whorls, altitude and diameter 0.5 mm, smooth, junction with 1st post-natal whorl distinct. Post-natal whorls 3. Spiral lirae 4 on 1st whorl, 5 on 2nd, 6 on 3rd, 13–15 additional lirae on base; lirae rounded, subequal to sulci in width. Growth-lines in places (back of outer lip) somewhat pliculose. Protoconch plus 1st whorl 1.3 mm long, protoconch plus 3 whorls 3.5×1.5 mm. Corneous brown.

Remarks: The two specimens (A8580, A8581) referred with some hesitation to this species, seem to me on further examination more like *hella* Thiele.

Some specimens, however, collected by Dr. Muir at Still Bay are undoubtedly *brunnescens*.

'*Columbella*' *vitula* Barnard, 1959'*Columbella*' *vitula* Barnard, 1959: 184.

Additional record: 34° S. 25° E., 46 metres. 3 specimens, up to 6×2.5 mm, 4 whorls.

Spiral groove not so conspicuous; tops of ribs therefore not so granular

'*Columbella*' *spreti* Thiele, 1925

Fig. 16e

'*Columbella*' *spreti* Thiele, 1925: 174, pl. 30 (18), fig. 25.

One specimen 3×1.5 mm appears to agree with the description and figure.

Locality: Off Keiskamma Point (between East London and Port Alfred), 33 fathoms, one dead (S.A.M. A29991).

Distribution: Originally described from Great Fish Bay, Angola.

'*Columbella*' *metella* Thiele, 1925

Fig. 16b

'*Columbella*' *metella* Thiele, 1925: 175, pl. 31 (19), fig. 4.

Description: Protoconch $1\frac{1}{2}$ whorls, smooth, junction with 1st post-natal whorl distinct. Post-natal whorls $3\frac{1}{2}$ –4. Axial ribs about 18 on 1st, about 20 on 2nd, 21 on 3rd, on last half whorl becoming irregular and evanescent. Spiral lirae subordinate to the ribs, 4–5 on 1st whorl, 5–6 on 2nd, 6–7 on 3rd, 7 on last part of shell, with about 12–15 additional lirae on base. Outer lip somewhat thickened, with indications of 2–3 denticles. Shell 5×2 mm, Thiele: 4.5×1.8 mm.

Localities: $34^{\circ} 51' S.$ $19^{\circ} 37' E.$, 80 metres, 3 (Thiele). Off Umhloti River (Natal), 100 fathoms, 3 and 2 broken. $34^{\circ} 5' S.$ $25^{\circ} 55' E.$, 67 fathoms, one (S.A.M. A29992, A29993).

Remarks: The ribs, and to a lesser degree the lirae, are sharp in the Natal specimens, and thus appear much less wide than the worn specimen figured by Thiele. The Algoa Bay (P.F.) specimen is also somewhat worn.

'*Columbella*' *consanguinea* Sow., 1897'*Columbella*' *consanguinea* Sowerby, 1897: 11, pl. 8, figs 6, 7. Barnard, 1959: 182.*Mangilia consanguinea* Bartsch, 1915: 25. Turton, 1932: 27.*Donovania stimpsoni* Bartsch, 1915: 33, pl. 3, fig. 3.*Columbella mutabilis* Turton var. *multicostata* (non Blanckenhorn) Turton and var. *convexa* Turton, 1932: 68.*Columbella langleyi* Sowerby and *consanguinea* Sowerby.

Bartsch (1915) transferred *consanguinea* to *Mangilia* without giving any reason; and Turton followed suit.

I have seen three specimens of *consanguinea* in the Turton collection, presumably those which he said (p. 27) agreed with specimens in the British Museum. They have obscure axial riblets, about 14–16 on the last of the three post-natal whorls; the spiral striae are distinct (scarcely 'minute' as Sowerby and Turton described them) 7–8 on 2nd and 8–9 on 3rd, with about 10–12 on base (the anterior ones feeble and difficult to count; cf. Sowerby's figures).

The axial ribs (when not worn) are crossed by the spiral striae, and are close enough together to render the interstices punctate (cf. Sowerby; though the punctae are more horizontally oval than circular).

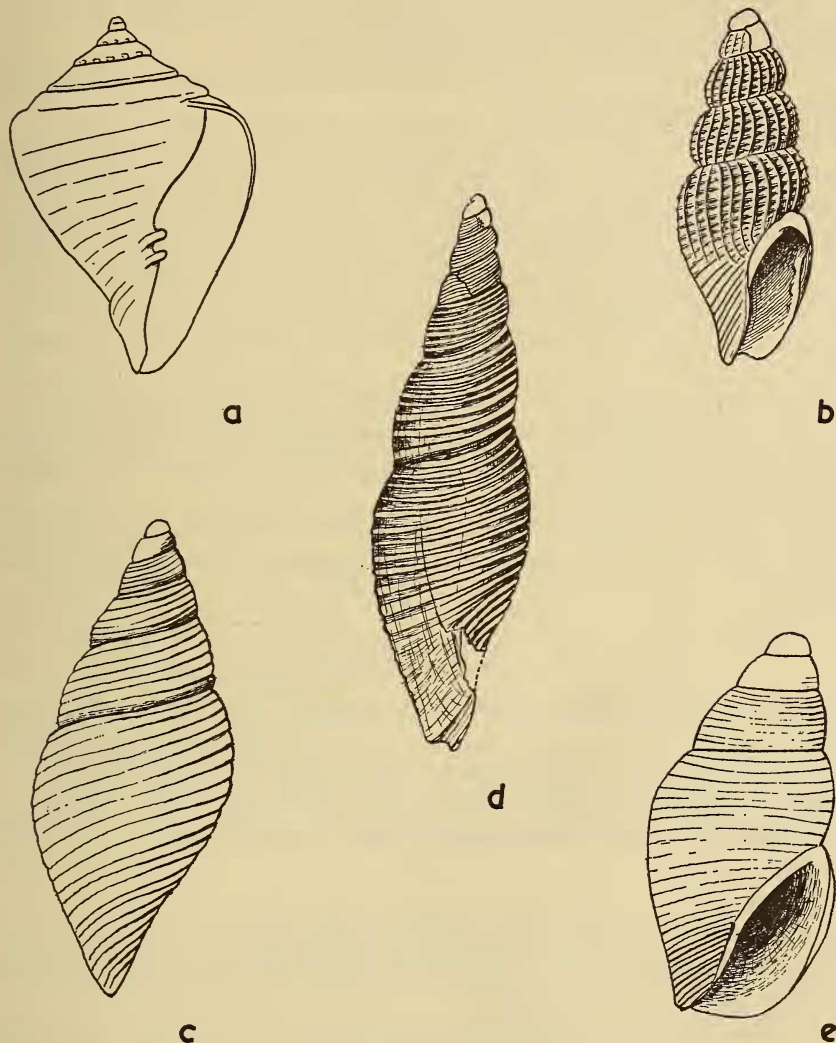


FIG. 16. a. *Columbella turturina* Lam. Juvenile. b. *C. metella* Thiele.
c. '*Columbella*' *confertilirata* Brnrd. d. '*C.*' *polyarusus* Brnrd. e. '*C.*' *spretia*
Thiele.

The protoconch of $1\frac{1}{2}$ -2 whorls is smooth, altitude and diameter 0.5 mm.

Turton said there were two rows of white spots, but these were not mentioned by Sowerby. In Turton's shells they have now (1961) faded, though in one shell faint traces of the row from the top remain.

Also in *langleyi* no mention of white spots was made by Sowerby, but Turton said there was one subsutural row.

The difference between the two species lies in the greater (*consanguinea*) or lesser (*langleyi*) development of the axial and spiral sculpture. Five worn specimens from False Bay agree with *langleyi*, and have two rows of white spots. Another specimen, identified by Tomlin as *langleyi*, appears smooth but when closely examined shows indications of the spiral striae. Two specimens were taken alive in False Bay, from which the radulae were extracted (Barnard, 1959: 179). These are also smooth but with indications of axial and spiral sculpture.

C. langleyi may be accepted as a relatively smooth form, normally with one or two rows of white spots; and *consanguinea* as the strongly sculptured form.

Both were described from specimens 4.5 mm and 4.25 mm long, respectively, with three post-natal whorls.

From its radula, *langleyi* can be placed in *Pyrene* (Barnard, 1959: 179), but up to the present no living examples of *consanguinea* or *mutabilis* have been obtained.

C. consanguinea Sowerby and *mutabilis* Turton, 1932

Turton said that *mutabilis* varies much in shape (p. 68, pl. 16, nos. 489, 490, 491; and also p. 68); when worn the axial ribs disappear and the shell appears smooth though the spiral lines are just visible (cf. *langleyi* above).

Thanks to Dr. A. J. Cain, Oxford University Museum, I have been able to examine Turton's type sets; *mutabilis* 5 shells, var. *multicostata* 6 shells, and var. *convexa* 5 shells.

All these are four-whorled (post-natal) shells from 4.75-6.25 mm long, except one three-whorled shell of 3 mm. The latter differs in no respect from his 4 mm *consanguinea* shells with indications of the subsutural white spots, but is somewhat paler.

In a series of nearly 50 shells from Still Bay there are examples agreeing with the various forms in Turton's type sets of *mutabilis* and vars, except that none of them is dark or chestnut brown like the *mutabilis* set. There are 4 or 5 which show faint traces of the subsutural white spots, and one with two rows of spots.

Thus there is no doubt that *mutabilis* is only the four-whorled (adult) stage of the three-whorled *consanguinea*, and consequently becomes a synonym of the latter.

Turton's varietal name *multicostata* is preoccupied for a fossil by Blanckenhorn, 1901; but there is no need to rename it.

'*Donovania stimpsoni* Bartsch, 1915

From Bartsch's figure and the words 'nuclear whorls decollated' (i.e. abraded?) in his description, one assumes that Stimpson's shell was dead. If this is so, Bartsch was optimistic in assigning it to *Donovania*, which he included as a turritid genus.

Thiele (1929) assigned the genus to the Buccinidae, using *Chauvetia* Monterosato in place of the preoccupied name *Donovania*.

The specimen in question looks very like a columbellid; and anyone familiar with the fauna of Simon's Bay, where Stimpson dredged, would expect to find a columbellid rather than a representative of a Mediterranean genus. In fact, at least five species of columbellids are found in that area.*

The three species *consanguinea*, *lightfooti* and *mutabilis* have axial riblets and spiral lirae; in dead shells of *lightfooti* the brown colour is patchy, in the form of interrupted lines on the lirae; *mutabilis* is uniformly brown (Turton).

'*Donovania stimpsoni*' resembles the latter in coloration (not a very good specific character). Axial riblets may vary in number and are liable to wear, and therefore are not very reliable characters. The spiral lirae in '*D. stimpsoni*' are 6 or 7, and 10 on the base; these numbers correspond with those in *mutabilis* (Barnard, 1959: 181).

In the type set of *mutabilis* (Turton No. 489) there are two worn shells with faint axial ribs and more or less distinct spiral striae, corresponding with '*D. stimpsoni*'. In fact, the shell with the more distinct striae might have posed for the drawing given by Bartsch.

Consequently *mutabilis* becomes a synonym of *stimpsoni* and both become synonyms of *consanguinea*.

In dealing with unworn shells, it is preferable for the time being to keep the smooth shells (i.e. with very indistinct sculpture) (*langleyi*) separate from those with strong sculpture (*consanguinea*). As stated above, the radula of the latter is unknown.

Columbella ? capensis Sow., 1892

Columbella capensis Sowerby, 1892: 22, pl. 1, fig. 20.

Tomlin (1931: 437) said this is a turrid belonging to the genus *Daphnella*. If so, a comparison with *Daphnella alfredensis* Bartsch, 1915 would be useful. Sowerby's figure is too small to be helpful; such as it is, it shows the spire longer than the aperture; Bartsch's figure of *alfredensis* shows spire and aperture subequal, and a topotype of the latter in the South African Museum shows the aperture longer than the spire.

Turton (1932: 68) said the shells which Bartsch recorded as *C. capensis* Smith (*sic: laps. cal.* for Sowerby) were quite different from Sowerby's *capensis*,

* *fulminea* Gould, 1860 = *kraussi* Sowerby, 1844, *langleyi* Sowerby, 1897, *consanguinea* Sowerby, 1897, *lightfooti* Smith, 1901, and *mutabilis* Turton, 1932.

Stimpson obtained the first named species (incidentally *alfredensis* Bartsch, 1915 is also a synonym of *kraussi*); what more likely than that he obtained also one of the other species?—ED.

and he named them *mutabilis*. The latter is a brown shell; *C. capensis* and *D. alfredensis* are both white shells (see above).

Fam. **Rapidae**

The following characters would seem to be useful in defining the South African species:

1. Spiral lirae approximately subequal, i.e. the intermediaries become as strong, or nearly as strong as the main lirae; and all the lirae are close together. The sculpture is therefore not clathrate.

Spire $\frac{2}{3}$ length of aperture:

Latiaxis rosaceus

Coralliophila fritschi (& *fragosa*)

C. isosceles

C. zuluensis

2. Spiral lirae alternately strong and weak. Axial ribs and strong spiral lirae forming a clathrate sculpture.

- a. Spire $\frac{2}{3}$ length of aperture. Weak spiral lirae between the suture and uppermost strong (prominent) lira.

Chaka's Rock (A29995)

Tongaat (11246)

Empangeni (U.C.T. G. 13 C.)

- b. Spire half length of aperture. Conspicuously clathrate. Area between suture and uppermost lirae with axial ribs but no spiral lirae. Aperture somewhat patulous.

Chaka's Rock (A29994).

Coralliophila sp.

Fig. 17a

Description: Spire $\frac{2}{3}$ length of aperture. Protoconch and 1st whorl worn away. Remaining post-natal whorls: 2nd corroded, 3rd, 4th and 5th, profile convex. Axial ribs 15 on 3rd, 13 on 4th and 12 on 5th whorl (probably 13 on 5th but outer lip broken); starting from suture above, and crossing base. Crossed by spiral lirae, 4 (5) on 3rd (somewhat worn) 8 on 4th whorl, of which the 4th, 6th and 8th lirae are more prominent than the others, 5th and 7th being intermediaries, 8th peripheral, on 5th whorl 10 lirae, 4th, 6th and 8th prominent, 10 becoming prominent beyond the aperture and on back of outer lip; in addition, smaller intermediaries above and below the 5th, 7th and 9th lirae. 3 lirae on base with 2-3 intermediaries between each pair, followed by 2 lirae above the costate and squamose rostrum. All lirae squamose.

Columella nearly straight, rimate anteriorly. Umbilicus closed by columellar callus. Canal short, anteriorly worn but probably slightly reflexed

when perfect. Aperture piriform, posterior margin of outer lip oblique to preceding whorl.

Shell 25×17 mm. White.

Locality: Chaka's Rock, Natal, one dead (S.A.M. A29995.)

Coralliophila sp.

Fig. 17b

Coralliophila fritschi von Martens, Barnard, 1959: 189.

On further consideration, this specimen appears to be different from *fritschi*, and resembles the large Chaka's Rock specimen.

Description: Axial ribs 15 on 2nd, 13 on 3rd, 12 (penultimate one is double) spiral lirae on same scheme as those of the Chaka's Rock specimen, i.e. the 2 peripheral ones and the 3 basal ones are stronger than the others. Sculpture clathrate. Shell 15×9 mm.

Locality: Tongaat, Natal.

Description: A similar specimen, 17×10 mm, but the axial ribs become irregular and obsolete on the 4th whorl. Spiral lirae unequal in strength. Sculpture clathrate, but not so conspicuous as in the Chaka's Rock and Tongaat shell. Animal examined, no radula.

Locality: Empangeni Coast, Zululand. One living (U.C.T. G.13.C.).

? *Coralliobia* sp.

Fig. 17c

Description: Spire half length of aperture. Protoconch $1\frac{1}{2}$ whorls, smooth, diameter 0.75 mm. Post-natal whorls 4, profile shouldered. Axial ribs 13 on 2nd, 13 on 3rd, 11 on 4th whorl, narrow between suture and uppermost spiral lirae, thickening below; on 4th whorl crossing base.

Spiral lirae 2 on 2nd and 3rd whorls, subequal or on the lower one peri-

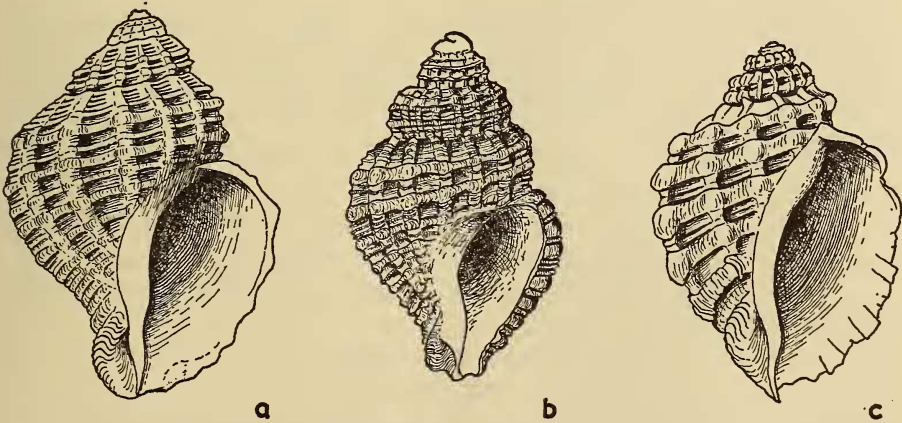


FIG. 17. a. *Coralliophila* sp. b. *Coralliophila* sp. c. *Coralliobia* sp.

pheral, the upper one forming the shoulder; on base 3 lirae, on 4th whorl feeble intermediaries, one between the two main lirae, 2 between each of the following pairs of lirae. All lirae squamose. Hollows between ribs and lirae deep, forming a strong, clathrate sculpture. Rostrum costate and squamose.

Columella gently curved, scarcely rimate, umbilicus closed. Canal short, anteriorly recurved. Aperture oval, somewhat patulous, the posterior margin of the outer lip (tabulate shoulder) slightly oblique to preceding whorl. Shell 12×8 mm. White.

Another specimen, 10×7 mm, but with more numerous axial ribs: 16 or 17 on 3rd, 14 on 4th whorl; lowermost basal lira more prominently squamose; intermediaries between developed.

Locality: Chaka's Rock, Natal, 2 dead (A29994).

Fam. Muricidae

Murex maurus Broderip, 1832

Murex maurus Broderip, 1832: 174. Tomlin, 1931: 435.

Locality: Durban, 3 alive, S.A.M. A29970.

Pteropurpura (Porofteron) uncinarius (Lam., 1822)

Fig. 19f

Pteropurpura (Porofteron) uncinarius (Lamarck), Vokes, 1964: 3.

'*Murex*' *uncinarius* Lamarck, Barnard, 1959: 198.

Pteropurpura (Porofteron) mitraeformis (Sow., 1841)

Pteropurpura (Porofteron) mitraeformis (Sowerby, 1841), Vokes, 1964: 3.

'*Murex*' *mitraeformis* Sowerby, Barnard, 1959: 200.

Additional record: Umhlali, Natal, living, S.A.M. A29971.

Trophon acceptans Barnard, 1959

Trophon acceptans Barnard, 1959: 202.

The further material which has recently (August and December 1959) been obtained has necessitated a revised definition of the species. The juveniles are now regarded as belonging to another species, which will remain unnamed pending more material.

The reference now reads: p. 202, fig. 40d (radula), 43b (adult only). S.A.M. A3449, A3473 (type) and A3480.

An amended description and a full discussion of the material is included in my report on Dr. Talbot's deep-sea Mollusca (Barnard, 1963c: 435).

The suggestion is also offered that *acceptans* may be synonymous with *guineensis* Thiele, 1925.

Trophon beatum n.sp.

Fig. 18c

Description: Protoconch $1\frac{1}{2}$ whorls, 0.4×0.4 mm, smooth but when seen highly magnified minutely shagreened. Post-natal whorls 4, profile angular.

1st whorl with 3 spiral lirae, the middle one strongest and peripheral lirae above and below weak at beginning of whorl; at end of 1st whorl a 2nd lira starts below, and at end of 2nd whorl, a 2nd lira starts above the peripheral keel, i.e. 5 lirae on 3rd and 4th whorls; crossed by axial riblets, the first 2 or 3 on the first whorl wider apart than the following riblets, about 25 on 1st whorl, increasing to about 40–50, retractive above and protractive below the peripheral keel, narrower than the lirae, the hollows axially oblong, 4 mm, white.

Locality: False Bay (University of Cape Town).

Remarks: The front part of the animal has been torn out, and no operculum or radula was obtained. Inclusion in the genus *Trophon* is therefore only provisional.

Afritrophon agulhasensis (Thiele, 1925)

Afritrophon agulhasensis (Thiele), Barnard, 1959: 208.

Additional records: Olifantsbos and Kommetjie, west coast of Cape Peninsula. One sinistral specimen from Olifantsbos.

**Tritonalia fenestrata* (Gould, 1862)

Peristernia fenestrata Gould, 1862: 124.

Tritonalia puncturata (Sowerby), Barnard, 1959: 212.

Tritonalia scrobiculata (Dunker, 1846)

Tritonalia scrobiculata (Dunker), Barnard, 1959: 212.

Additional record: Lüderitzbucht (U.C.T.).

Tritonalia juritzi n.sp.

Fig. 18d

Description: Protoconch $1\frac{1}{2}$ whorls, altitude 0.75, diameter 0.5 mm, smooth. Post-natal whorls 6 (7th broken off). Axial ribs 10 on each whorl; spiral lirae 2 on 1st whorl, 3 on 2nd–5th whorls, 4 on 6th, the uppermost forming a well-marked shoulder, all of the lirae stronger than the axial ribs; space between suture and 1st lira smooth except for growth-lines and axial ribs; spaces between the lirae narrow; intersections bluntly nodulose. Shell incomplete, base and aperture broken. Shell 8 × 3 mm. White.

Locality: Doubtful, possibly Cape Peninsula.

Type: Holotype in South African Museum. S.A.M. A30051.

Remarks: This single specimen was found amongst a large number of *T. purpuroides* collected and sorted by the late C. Juritz, a resident of Cape Town. In style the sculpturing closely resembles that of *purpuroides*: a rather broad subsutural tabulate space followed by thick lirae, the hollows between them

* *Tritonalia* Fleming, 1828 may be a *nomen dubium*, in which case it must be replaced by *Ocenebra* (Leach), Gray, 1847.

horizontally narrow oblong. The protoconch is higher than wide, thus resembling that of *scrobiculata* more than that of *purpuroides*.

The greater number of whorls is an obvious difference; even adult *purpuroides* has at most 5 whorls, and at 8 mm length has only $3\frac{1}{2}$ -4. There are fewer axial ribs, and only 2 spiral lirae. These differences would seem to exclude the possibility of this shell being a narrow scalariform aberration of *purpuroides*. *Mangilia gemmula* Turton, 1932: 26, is comparable in having the same number of whorls at a length of 4 mm and 2 spiral lirae; but these are more widely spaced, and there are 12 axial ribs, consequently the hollows are more squarish, less horizontally narrow oblong. Turton's description stated one protoconchal whorl and 4 post-natal whorls; his figure gives the impression of 2 and 3 respectively.

Although provisionally included in *Tritonalia* on account of its resemblance to *purpuroides*, the possibility remains that the present shell is a turritid.

Tritonalia aedicularum n.sp.

Fig. 18e

Description: Protoconch $1\frac{1}{2}$ whorls, smooth, altitude and diameter 0.6 mm. Post-natal whorls 5, whorls convex, sutures deep. Axial ribs on 1st whorl 12 or 13, on 2nd 13, on 3rd 13 or 14, on 4th 18 or 19, on 5th 20; on 4th and 5th whorls the ribs are at somewhat irregular intervals and some of them are duplicated (hence sudden increase on 4th whorl). On 1st and 2nd whorls 2 peripheral spiral lirae, on 3rd a 3rd lira develops between the suture and the upper peripheral lira; on 4th whorl 2 lirae between suture and upper peripheral lira and one between lower peripheral lira and the suture below, i.e. 5 lirae; on 5th whorl 3 lirae above the upper peripheral lira, i.e. total 6 lirae; a fine lira is visible immediately above the lower suture on 2nd, 3rd and 4th whorls, forming on the 5th whorl the uppermost basal lira; on base 8 lirae.

Junctions of ribs and lirae nodular on 1st and 2nd whorls, thereafter becoming squamulose (crispate), squamae on basal lirae or rostrum close together.

Aperture subequal to spire; canal narrow, well marked off from rest of aperture. 14.5×6.5 mm (5 whorls); 11×5 mm (4 whorls).

Locality: $33^{\circ} 50'$ S. $25^{\circ} 47'$ E., 36 metres, one living (4 whorls), one dead (U.C.T.).

Remarks: The radula has more resemblance to that of *Thais castanea* (Barnard, 1959; fig. 40i) than to that of *Tritonalia puncturata* (= *fenestrata*) *ibid.*, fig. 40c): lateral cusp with a denticle on inner margin, and 2-3 denticles externally.

Thais capensis (Petit, 1852)

Thais capensis (Petit), Barnard, 1959: 220.

Remarks: In addition to *succincta natalensis* n.var., Nardini also recorded *tumulosa* Reeve from Umkomaas (1934: 206, pl. 15, fig. 16). Nardini's photo of his specimen undoubtedly represents *capensis*. He claimed that the latter

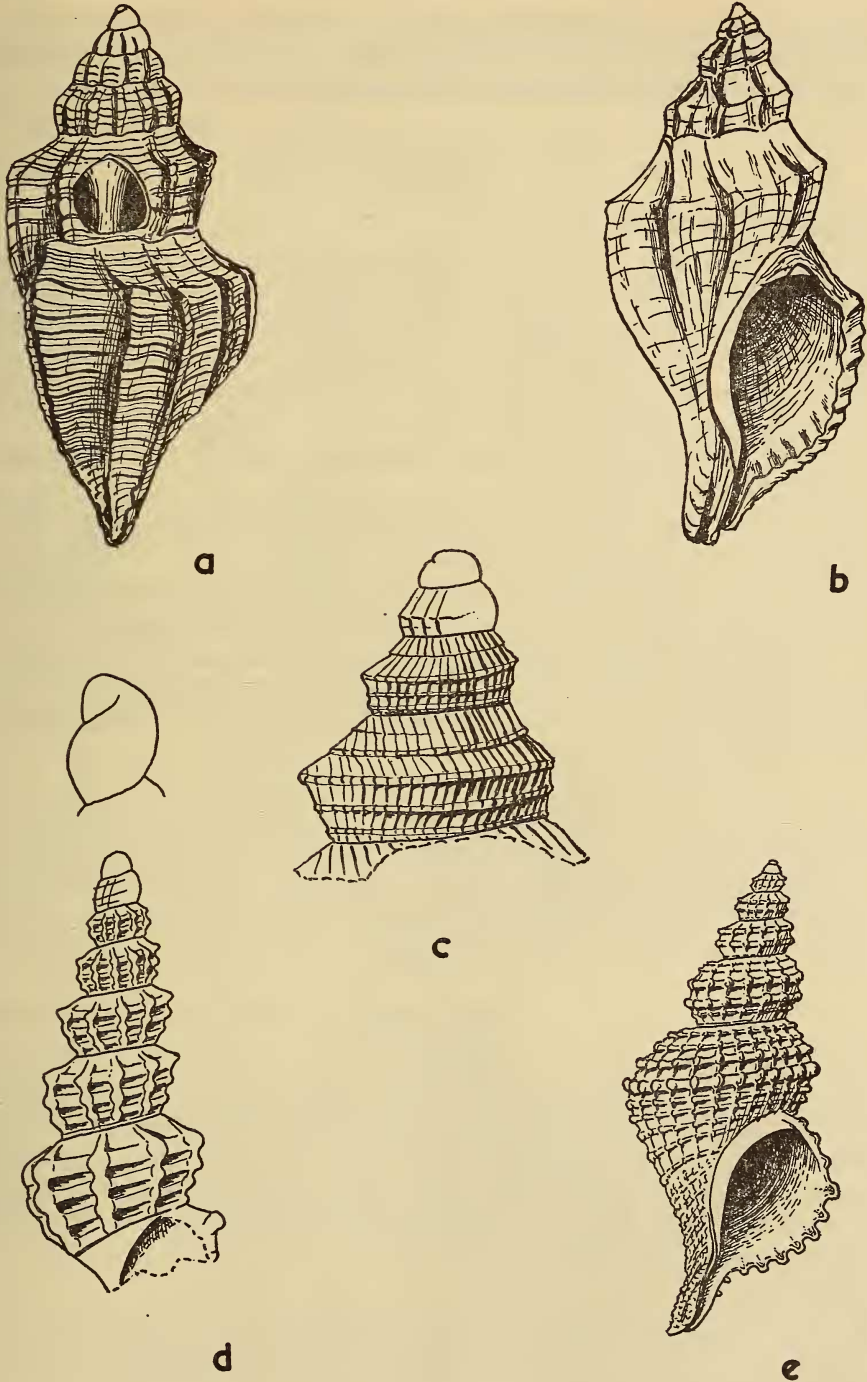


FIG. 18. a. '*Purpura*' *wahlbergi* (Krss). b. '*Purpura*' *wahlbergi* (Krss). c. *Trophon beatum* n.sp. d. *Tritonalia juritzi* n.sp. Protoconch further enlarged. e. *T. aedicularum* n.sp.

species, i.e. what he called *tumulosa*, had been 'found fossil for the first time'; but his specimens were not true fossils in the usual sense, but were obtained from kitchen-middens; there are no Pleistocene deposits at Umkomaas.

'Purpura' wahlbergi (Krss, 1848)

Fig. 18a

Thais wahlbergi (Krauss), Barnard, 1959: 223.

Description: Shell 23 × 13 mm. Protoconch plus 5 whorls. 1st whorl: 11 or 12 ribs (corroded), 2nd whorl: 11 ribs, 4 spiral lirae; 3rd whorl: 11 ribs, 5 spiral lirae; 4th whorl: 10 ribs, 6 spiral lirae plus 2 or 3 intermediaries; 5th whorl: incomplete. On the 3rd whorl the ribs tend to become lamellate and shouldered, increasingly so on the 4th and 5th whorls. Shoulder not sharply angular as in '*Murex*' *w.*

Spiral lirae ± crispate. Aperture pinkish-fawn. Radula as in Langebaan and Oudekraal specimens.

Locality: One living specimen of the lamellate form was taken by the University of Cape Town (L.B. 552A) at Langebaan.

Remarks: At first sight resembling '*Murex*' *wahlbergi* Krauss, but the shoulders are less sharply angular, and the lirae are for the most part crispate.

In the non-lamellate form the growth-lines at intervals tend to become slightly lamellate, each lira forming a squamule, but not raised more than 0.5 mm above the surface. In the lamellate form some of the lamellae project 1 mm at the shoulder.

Fig. 18b

Four specimens, probably of this species, were obtained from dredgings in Simonstown dockyard, by Mrs. Connolly. Largest: 26 × 14 mm. (See figure.)

Protoconch corroded away, 5 whorls remaining. 9 axial ribs on the earliest whorl, 8 on each of the others. Traces of spiral lirae on 2nd remaining whorl, and on back of outer lip. Outer lip varicoid, 6-plicate within, canal narrow.

? **Muricidae**

Fig. 19a-e

Description: Protoconch about 1 & 1/5th whorls, bluntly conical, spirally hollowed, ending with a varix (1); followed by about half a whorl, with 4 varices (2-5), the last forming the outer lip; the 2nd-5th varices lamellar, auriculate above. Two spiral lirae, with faint indication at outer lip of the formation of a third lira. 1.5 × 1 mm, diameter of protoconch (as seen from aperture side) 0.4 mm. White, shiny.

Locality: Still Bay.

Remarks: The apical, spirally hollowed portion of the protoconch bears some resemblance to that of *Afritrophon* (Barnard, 1959: fig. 45a and c), but in other respects is quite different.

The size of the present protoconch seems to indicate a small species about the size of the species of *Afritrophon*. Probably a muricid, less likely a turritid.

From its fresh unworn condition the shell cannot have been washed up from far off the coast.

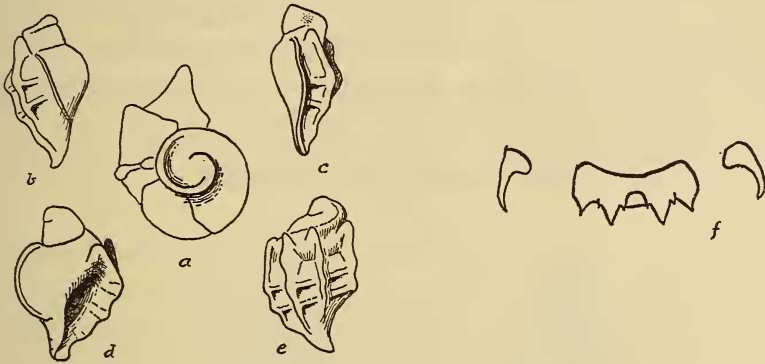


FIG. 19. a-e. Genus? f. Radula of *Pterynotus (Poropteron) mitraeformis* (Sow.).

Fam. Columbariidae

Columbarium cf. *formosissimum* Tomlin, 1928

Fig. 20b

Columbarium formosissimum Tomlin, 1928: 331, pl. 25, figs 1, 2.

Description: Protoconch, altitude 1.5, diameter 1.3 mm, smooth, 2 whorls, junction with 1st post-natal whorl not distinct. 7 post-natal whorls, profile angulate a little below the middle of the whorl; axial ribs 12 on 1st 3 whorls, reduced to 10 on later whorls, stronger below than above the peripheral angulation where they form \pm complanate rounded lobes. On the body whorl the ribs are slightly angular below the peripheral lobes. Fine spiral lirae above the periphery, 2 on 2nd whorl, increasing to 6 (7) on 6th whorl, but becoming obsolete on 7th whorl except 2 or 3 faint ones just above the lobes; below periphery one on 2nd whorl increasing to 3 on 6th and 4 on 7th whorl; on body whorl 3 slightly stronger lirae form small projections on the profile, with a fine intermediary between each pair; below these, on base and rostrum at least 25 lirae. Growth-lines rather prominent, forming axial striation above the peri-

pheral lobes, less distinct below the lobes. Sutures undulate. Periostracum thin, fibrous, pale brown.

Locality: 29° 56' S. 31° 12½' E., 200 fathoms (off Durban). Fisheries Survey Station K220. Two dead, both with hermit crabs. 39 × 16 mm, nucleus of protoconch missing, 7 whorls. 47 × 17 mm, protoconch plus 7 whorls.

Remarks: Very close to *formosissimum* Tomlin, but the whorls are more angulate, less carinate at the periphery, the axial ribs are better developed above the periphery, the peripheral lobes become fewer on the later whorls instead of increasing in number (12 to 10, instead of 8 to 11), the subperipheral angulation on the body whorl has 3 fine lirae instead of 2 (or only one) prominent lirae between the prominent keels. The shell is thus less pagoda-like.

Proportionally broader than *angulare* Barnard, 1959, and without the prominent spiral lirae of *radiale* (Watson, 1882 & 1886).

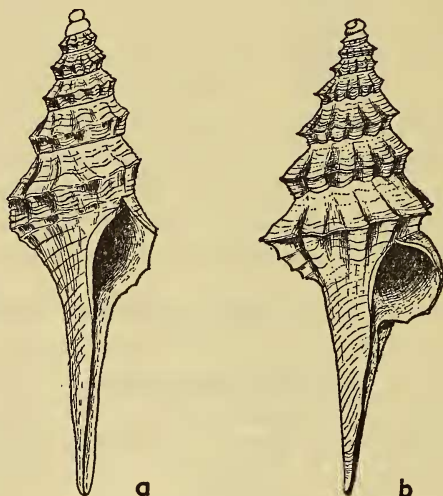


FIG. 20. a. *Columbarium angulare* Barnard.
b. *C. cf. formosissimum* Tomlin.

TAENIOGLOSSA

Fam. Tonnidae

Tonna ampullacea (Phil., 1845)

Tonna ampullacea (Philippi), Jackson, 1927: 77.

Jackson states that a specimen was collected from the 'Natal coast near Durban'.

Tonna perdix (L.)

Tonna perdix (L.), Barnard, 1963a: 7.

Dr. A. C. van Bruggen of the Natal Museum reports that this species is moderately common in Durban Bay; it has been collected by H. C. Burnup

(Natal Museum) and recently by P. Elston, and there is a specimen from Vetch's Pier, Durban, in the collection of Mrs. H. Boswell.

Fam. Cymatiidae

Mayena gemmifera (Euthyme, 1889)

Argobuccinum (*Eugyrina*) *gemmaifera* (Euthyme), Macnae & Kalk, 1958: 128. Dell & Dance, 1963: 159. Barnard, 1963a: 23.

The genus has been confirmed by the radula and operculum.

Additional record: Scarborough, west coast of Cape Peninsula.

Argobuccinum (*Gyrineum*) *pusilla* (Brod., 1832)

Fig. 21

Argobuccinum (*Gyrineum*) *pusilla* (Broderip), Barnard, 1963a: 24.

Description: Protoconch altitude 1, diameter 1.25 mm, 2 whorls, smooth, with growth-lines only. Junction with 1st post-natal whorl distinct. 1st whorl with 15 axial riblets, the 8th and 15th varicoid, and 2 spiral lirae.

Radula with about 110 rows, as in *Argobuccinum argus*: lateral plate with 3 small denticles outside the main cusp, inner (posterior) marginal with one denticle at the bend of the plate.

Fam. Lamellariidae

The following table which has been adapted from Bergh, 1908, is useful in distinguishing the three species of *Lamellaria*.

	<i>capensis</i>	<i>perspicua</i>	<i>leptoconcha</i>
Radula	Hind margin straight.	Hind margin strongly indented.	Hind margin less strongly indented. Lateral plates very stout.
Colour	Several denticles on either side of median cusp. Uniform whitish	Grey with numerous ± large blackish spots.	Upper side of mantle greenish white; underside of mantle, neck and upper side of foot velvet black; tentacles and sole of foot white.
Shell	White (? Calcareous)	'Very fragile'	Membranous.

Fam. **Naticidae**

Azuma, 1961: 196-204, pls. 12-15.

Natica forata Reeve

Natica forata Reeve, Bartsch, 1915: 138. Turton, 1932: 158. Barnard, 1963a: 59.

Radula like that of *genuana*; both marginals simple.

Locality: East London.

Natica saldontiana Bartsch, 1915

Natica saldontiana Bartsch, 1915, Barnard, 1963a: 60.

Additional records: 26° 37' S. 15° 4' E., 35 metres, living. U.C.T. 30° 42' S. 15° 59' E., 201 metres.



FIG. 21. Radula of *Argobuccinum pusilla* (Brod.).

Fam. **Xenophoridae**

Morton, 1958: 89, pl. 9 (adaptations and relationships).

Xenophora solaris (L.)

Xenophora (Haliphoebus) solaris (L.), Barnard, 1963a: 69.

Description: Diameter: 48 mm without processes, 58 mm with. Up to a diameter of 20 mm small stones are attached approximately one between each pair of processes; thereafter, no attachments. Umbilicus open.

Additional record: 29° 42' S. 31° 21' E., 57 fathoms. Fisheries Survey Station K241.

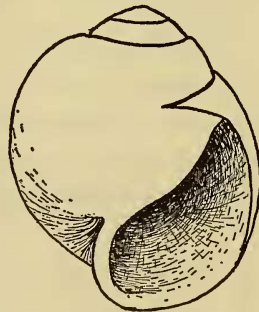


FIG. 22. *Falsilunatia pseudopsila* Brnrd.

Fam. **Fossaridae***Fossarus translucens* n.sp.

Fig. 23a

Description: Shell thin, translucent. Protoconch 2 whorls, smooth; junction with 1st post-natal whorl distinct. Post-natal whorls 2. Two spiral lirae from the start of the 1st whorl; on second half of this whorl a lira develops between the suture and the upper lira; so that the latter becomes the second lira on the 2nd whorl; a fourth lira develops below the original lower lira (later the 3rd); on base, 2 lirae and an indistinct 3rd. All lirae evanescent towards back of outer lip. Growth-lines retractive, more or less feebly piculose. Umbilicus narrow, deep. Columella straight, aperture large, subcircular. Shell 4.75×5 mm. White, protoconch pale corneous.

Locality: Gordon's Bay (False Bay), one, dead.

Type: Holotype in the South African Museum. S.A.M. A30052.

Remarks: Without operculum and radula the position of this shell is doubtful, but it appears referable to *Fossarus*. Similar in shape to *F. ambiguus* but with relatively larger and more circular (less semicircular) aperture. Compared with the only available specimen of *ambiguus* (one from Natal) the present shell is thinner and more delicate, the protoconch is larger, and the lirae weaker; *ambiguus* has only 2 lirae above the periphery on the 2nd whorl.

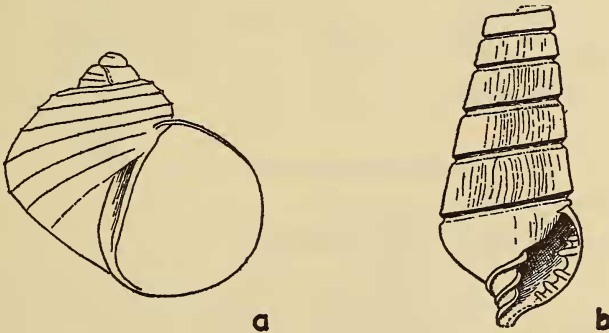


FIG. 23. a. *Fossarus translucens* n.sp. b. *Pyramidella turrita* (A. Ad.).

Fam. **Pyramidellidae***Pyramidella* (*Longchaeus*) *turrita* (A. Adams, 1854)

Fig. 23b

Obeliscus turritus A. Adams, 1854: 807, pl. 171, fig. 17.

Pyramidella turrita (A. Adams), Schepman, 1909: 24. Nardini, 1934: 239, pl. 18, (5), fig. 4.

Description: Five whorls, apex missing. Whorls straight-sided, finely crenulate on upper margin, polished. Sutures channelled. Growth-lines slightly concave, extending from suture to suture, but at variable intervals and often indistinct

(surface worn in places). Spiral striae microscopic. Last whorl with peripheral sulcus. Not umbilicate. Three columellar pleats. Outer lip internally with 6 plicae, the posterior one minute. Shell 19×8.5 mm. White, with a few extremely faint brownish patches.

Fossil: Quaternary, Adulis (Erythrea, Red Sea) (Nardini, 1934). Durban Harbour sediments, 0' — 30', one specimen (Professor Lester King, 1963).

Distribution: Living: Red Sea (Issel, 1869), North Australia, Queensland, East Indies.

Remarks: The present specimen agrees with Adams's description. Hedley, (1899) states that the adults develop plicae within the outer lip. Laseron (1959) gave reasons for rejecting *Longchaeus* and proposed *Wingenella* instead, with the North Australian *eburnea* Laseron as the type species. He did not mention *turrita*. Where the growth-lines are far apart, the intervals appear like low flat ribs; but these are not strong enough to warrant putting this specimen into the subgenus *Pharcidella* Dall.

Nardini (1934) figured a specimen 13×3.5 mm, with 9–10 whorls.

Turbonilla trachealis Gould, 1861

Turbonilla trachealis Gould, Barnard, 1963a: 84.

Additional record: Lüderitzbucht, U.C.T.

Turbonilla pellucida (Sow., 1897)

Turbonilla pellucida (Sowerby), Barnard, 1963a: 84.

Additional record: West coast of Cape Peninsula.

Turbonilla tegulata Sow., 1892

Turbonilla tegulata Sowerby, Barnard, 1963a: 86.

Additional record: West coast of Cape Peninsula.

Turbonilla similans Smith, 1903

Turbonilla similans Smith, 1903a, Barnard, 1963a: 87.

Additional record: Kommetjie, west coast of Cape Peninsula.

Odostomia lavertinae Smith, 1901

Odostomia lavertinae Smith, Barnard, 1963a: 91.

Additional record: West coast of Cape Peninsula.

Odostomia crispa (Sow., 1892)

Odostomia crispa (Sowerby), Barnard, 1963a: 92.

Additional record: False Bay.

Fam. **Scalidae****Scala aculeata* (Sow., 1844)*Scala aculeata* (Sowerby), Barnard, 1963a: 101.*Additional record*: Queensbury, East London.*Scala munda* n.sp.

Fig. 24b

Description: Protoconch 2 whorls, smooth, shiny, pale corneous. Post-natal whorls 3. Axial pliculae beginning on later half of 1st whorl, about 20; 32 on 2nd, 33 on 3rd becoming feeble and indistinct towards end of 3rd whorl, distinct only in upper quarter of whorl near suture, though a few cross the whorl, rather stronger than the other growth-lines. On upper part of the base, 3-5 fine spiral striae. Umbilicus a mere chink. Aperture oval. Shell 4.5×3 mm. White.

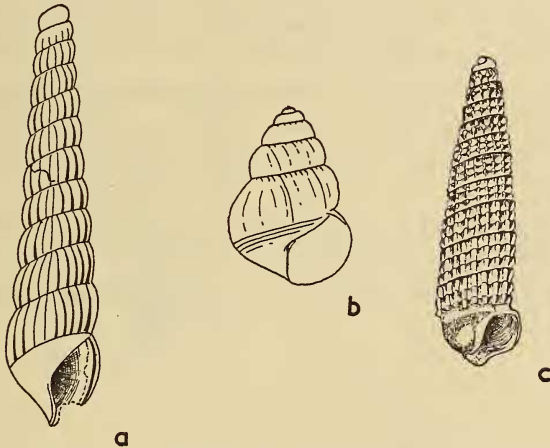


FIG. 24. a. *Turbonilla bathybius* Brnrd. b. *Scala munda* n.sp. c. *Cerithiella vidalensis* Brnrd.

Locality: Cape Point N. 89° E., 36 miles, 700 fathoms, 4.*Type*: Holotype S.A.M. A30552, paratypes S.A.M. A7419, Pieter Faure collection.

Remarks: Nine specimens were taken; five were sent to Tomlin, and are presumably still in the Tomlin collection (National Museum, Cardiff). The shells appear to be referable to *Scala*.

Fam. **Triforidae***Trifora natalensis* Barnard, 1963*Trifora natalensis* Barnard, 1963a: 112.*Additional record*: $33^{\circ} 9'$ S. $28^{\circ} 2'$ E., 84 metres, one, U.C.T.

* Most authors regard *Scala* (Klein), Bruguière, 1792 as an invalid name, and replace it by *Epitonium* Röding, 1798.—ED.

Fam. **Potamididae**

Annandale, 1924: 549, fig. 11 (note on the reduction of cusps in the radula).

Pirenella boswellae Barnard, 1963

Fig. 25a, b

Pirenella boswellae Barnard, 1963a: 140 (preliminary description).

Description: In general, similar to *stowi* Newton, 1913, from the mid-Pliocene deposits at Redhouse, Port Elizabeth. Larger than the fossil, seemingly increasing more rapidly in width, and with less prominent nodules.

Nucleus broken, 15 whorls. Obscure nodules at top of whorl, and another series on lower part of whorl; the latter less distinct than the upper series because half concealed by the following whorl, but on last whorl, where they are fully exposed, they are slightly larger than the upper series; 8 or 9 on 5th whorl, 11 on 9th and following whorls. Profile of whorls slightly concave in the middle. Two faint varices, i.e. the upper and the lower nodules are connected, on 5th to 9th whorls, more or less on opposite sides of the whorl. Fine spiral striae on whole whorl, 11 or 12 on 5th whorl (earlier whorls slightly worn), increasing to 17 or 18 on last whorl. On base 6 striae, then a slight spiral ridge, followed by about 20 striae. Shell 52×19 mm. Fulvous, the hollows between the nodules and the concave part between the upper and the lower series of nodules somewhat darker.

Locality: Off Durban, from fish stomach. Holotype in collection of Mrs. Boswell.

Remarks: It is not known, owing to the worn condition of the fossils, whether there are any spiral striae; and therefore the present specimen cannot be identified as *stowi*.

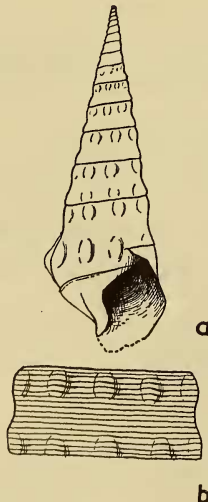


FIG. 25. a. *Pirenella boswellae* Barnard. b. One whorl, further enlarged.

The original description stated that the lower series of nodules was double, and the figure shows this. But specimens in the South African Museum show only a single series, thereby increasing the likeness between the recent and fossil shells.

Both appear referable to the same genus, but whether such large shells should be included in *Pirenella* is a matter of opinion. Newton remarked that the 39×12 mm *stowi* was larger than other species of the genus.

Fam. **Rissoiidae**

Alvania alfredensis Bartsch, 1915

Alvania alfredensis Bartsch, 1915, Barnard, 1963a: 186.

Additional record: Olifantsbos and Kommetjie, west coast of Cape Peninsula.

Amphithalamus turtoni Bartsch, 1915

Amphithalamus turtoni Bartsch, 1915, Barnard, 1963a: 188.

Additional record: West coast of Cape Peninsula.

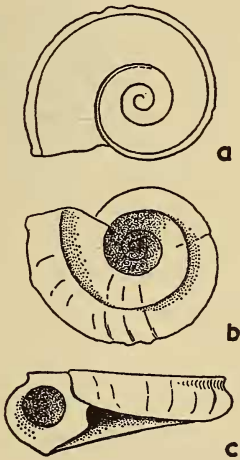


FIG. 26. *Retrotortina* ? *cuniculus* n.sp. a. Dorsal view. b. Ventral view. c. Apertural view.

? Fam. **Skeneopsidae**

? *Retrotortina cuniculus* n.sp.

Fig. 26a, b, c

Description: Shell sinistral, 3 whorls, planorboid, flat above, bordered by a slight but distinct keel; profile of whorl convex, the periphery in dorsal view showing beyond the keel. A keel in middle of lower surface of whorl. A few (5-6) weak varicoid growth-lines, at irregular intervals. Widely umbilicate. Aperture circular, exsert. Diameter 1.5, altitude at aperture 0.5 mm. White, somewhat glistening.

Locality: Algoa Bay (probably 30-40 fathoms).

Type: S.A.M. A30053, Pieter Faure number 580.

Remarks: Resembling a juvenile *Heliacus* (cf. Barnard, 1963a: fig. 31) more than a juvenile *Astraea* (cf. Barnard, 1963b: fig. 7d, e) but differing in profile from *Bifrontia zancaea* (see Sowerby, 1868: pl. 254, fig. 102).

Thiele's diagnosis (1929: 176) of *Retrotortina* Chaster, 1896, would include the present shell; very small, sinistral, flattened, widely umbilicate, aperture subcircular. Placed with a '?' in the Skeneopsidae by Thiele. The present species may be placed with a '?' in Chaster's genus. It is thrice as large as *fuscata* Chaster from the Mediterranean. *Vermetus agulhasensis* Thiele, 1925, is sinistral and has a similar exsert peristome, but has nothing else in common with the present shell. In spite of their being dextral, some of the Liotiidae described by Laseron (1954) are somewhat similar in general shape.

RHIPIDOGLOSSA, DOCOGLOSSA, TECTIBRANCHIATA

Fam. **Turbinidae**

Turbo boswellae n.sp.

Fig. 27a

Description: Protoconch nucleus plus 5 whorls. Nucleus and 1st whorl corroded. 2nd whorl with 4 spiral lirae of equal strength, but later the 2nd and 3rd lirae become stronger; 3rd whorl with 2 stronger lirae and 4 weaker ones above; 4th with 2 strong lirae and 5 or 6 weaker ones above. There is a third strong lira on the periphery but this is hidden under the suture and appears only towards the end of the whorl where the 5th whorl drops down towards the aperture; below the 3rd lira 4 or 5 weaker ones, 5th whorl with indications of 8 or 9 weak lirae between the suture and the 1st strong lirae, 4 between 1st and 2nd lirae, 3 between 2nd and 3rd, and 5 between 3rd or peripheral lira and the basal lira which begins at the top of the aperture. Base with indications of about a dozen weak lirae. Growth-lines retractive, rather well-marked on 2nd and early part of 3rd whorls, forming almost a cancellate sculpture.

Imperforate columella without knob or pleat. Interior nacreous. Operculum round-oval, with a slight notch on inner margin and faint indication of a spiral line, above which faint growth-lines can be traced; surface concave, the upper part slightly thickened. White, rather shiny. Altitude 17.5, diameter 17 mm. Dull whitish. Operculum 6.5 × 5.75 mm.

Radula with about 50 rows. Central plate broad, front margin curved, cutting edge weak; 5 lateral plates, the 5th only slightly broader than the rest; inner marginals apically strongly falcate, minutely serrulate, middle marginals sigmoid, apically minutely serrulate, outer marginals slender, apically somewhat spatulate, minutely serrulate on both margins.

Locality: Off Cape Point, about 200 fathoms.

Type: Holotype in South African Museum, S.A.M. A30031.

Remarks: Similar to the almost smooth *Turbo* (*Cantrainea*?) *incoloratus* Smith (1899; 1901), from off South India, 430 fathoms; but definitely lirate and with

perfectly smooth columella. It is very similar to the North Atlantic *Turbo peloritanus* Conraine and its varieties as figured by Locard (1897: pl. 21, figs 28-36). In shape it is almost like var. *cingulatus* Locard (fig. 31) but the liration is not quite like that in any of Locard's figures. For the time being this solitary specimen from a widely distant region may be regarded as a new species.

Fam. **Trochidae**

Calliostoma circus n.sp.

Fig. 27b

Description: Protoconch nucleus plus 6 whorls. Profile straight. Sutures sunken. 1st to 3rd whorls with 2 beaded spiral lirae, the upper margin (bordering the suture) also beaded. On 4th whorl an intermediary develops between the beaded upper margin and the 1st lira, and one below the 2nd lira; both becoming stronger on 5th whorl; the beaded upper margin also moves away from the

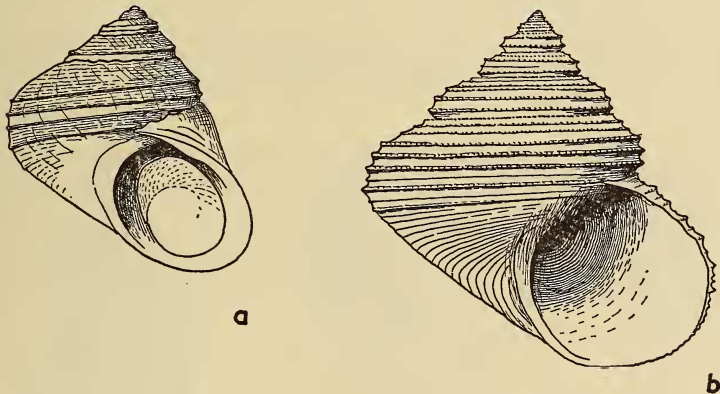


FIG. 27. a. *Turbo boswellae* n.sp. b. *Calliostoma circus* n.sp.

actual sutural margin, becoming a separate beaded lira. The 5th and 6th whorls thus show 2 beaded lirae in the upper half of the whorl and 3 in the lower half, on the 6th whorl a fine non-beaded intermediary develops between the suture and the 1st lira, between the 1st and 2nd lira, and between the 2nd and 3rd; also one below the 5th lira, below it and the 1st basal lira; at the end of the 6th whorl (back of outer lip) the latter intermediary becomes double. Base with 1st lira strong, followed by about 20 lirae, more or less subequal in strength. Aperture subcircular, nonperforate.

Radula with 5 (6) laterals, 1st marginal stout, 4-5 dentate, the outermost marginal strap-shaped. Truncate apex slightly turned over.

Shell 23 × 23 mm. White, iridescent when wet.

Locality: Presumably somewhere off Cape Point. Taken by trawler.

Type: In South African Museum, S.A.M. A30032.

Remarks: Differs from *perfragile* Sowerby by having fewer spiral lirae on the whorls, and stronger lirae on the base. Very similar in shape and liration to the Northern Atlantic *Zyziphinus triporcatus* Fischer as figured by Locard (1897: pl. 2, figs 13-15), but in having granulate lirae and more numerous lirae on the base, it resembles *cleopatra* Fischer (Locard, 1897: 12, figs 20-23).

Also very near *leptophyrna* Dautzenberg & Fischer, 1896, from the Azores, 550-845 metres. Differs in being a larger shell (*leptophyrna* with same number of whorls 16×16 mm), with 5 spiral lirae (instead of 4) on last whorl, and more numerous lirae (20 instead of 12) on the base.

Fam.? Gen.?

Fig. 28a, b

Description: Fine apical whorls, very finely cancellate with close-set axial and spiral threads. The following whorl creeps up the spire so as to conceal the lower half of the 5th apical whorl; the 5 apical whorls are thus oblique to the axis of the large last whorl.

Last whorl thin-shelled, with a weak keel forming a shoulder; on back of last whorl midway between upper suture and keel, an opaque white line, which

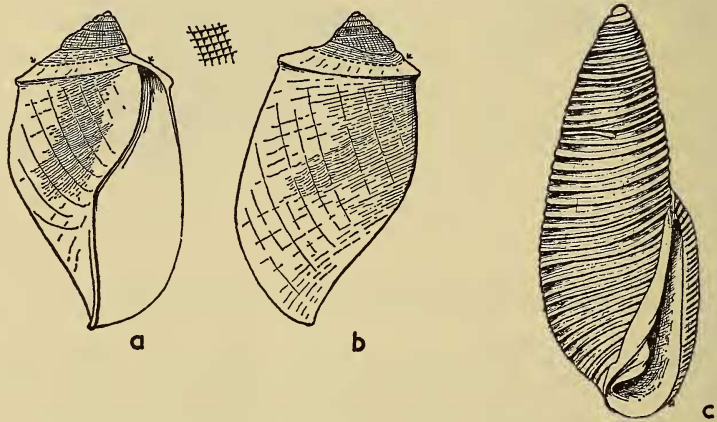


FIG. 28. a, b, ? genus, with enlarged view of cancellate sculpture on apical whorls. c. *Solidula niecaensis* Brnd.

would form the sutural line of a succeeding whorl. Fine spiral striae above the white line, but none traceable below; a few obscure growth-lines cross the whorl. On last whorl, innumerable very fine spiral striae, minutely crinkly and feebly scalloped or kinked where they are interrupted by the growth-lines; on later half of whorl (back of outer lip) most of the striae cease more or less abruptly while some combine at wider intervals.

Columella straight. 5.5×2.5 mm. White, last whorl semitranslucent.

Locality: Off Illovo River, Natal, 27–30 fathoms, one.

Type: S.A.M. A30054, Pieter Faure 11097.

Remarks: The thin shell and fine sculpturing suggest a tectibranch.

LAMELLIBRANCHIATA

Fam. Pectinidae

Amussium cf. *sibogai* Dautz. & Bav., 1904

Pl. 1

Amussium sibogai Dautzenberg & Bavay, 1904: 207–211, figs 1–4. Dautzenberg & Bavay, 1912: 31.

Description: Upper (right) valve corneous, with 6 radiating dull orange-brown streaks, widening distally, with rounded ends, margin paler.

Lower valve pale, flesh-coloured, with 6 faint pale brown radial streaks. Margin white (opaque).

Both valves with fine close concentric growth-lines only; ears similar. Upper valve internally with 6 ribs, appearing narrow, but actually corresponding in width with the external coverings, whitish, but ending in a brown more or less circular expansion. Lower valve internally with 6 ribs, white. No trace of a byssus sinus.

Animal (as preserved in formalin) whitish, mantle margins pale salmon-pink. One, 44 (altitude) × 42 mm—upper valve.

Locality: 29° 55' S. 31° 16' E., 222 fathoms. Fisheries Survey Station K247.

Remarks: Agrees with the coloured figures in Dautzenberg & Bavay, 1912, except that it has only 6 ribs instead of 7. (I have not seen the original description.)

Amussium sp.

Pl. 2

Description: Upper (right) valve orange-salmon, with 7 radiating white streaks, narrow, not (or scarcely) widening distally, not extending to margin. Lower valve pale pink, with 7 white radiating streaks, widening distally, extending to margin. Right valve with fine close concentric growth-lines; early part of shell up to about 8–10 mm altitude, with fine radial lirae, later obsolescent, only 2 or 3 reaching the margin (anterior part). Lower valve with regular fine concentric lirae, a few lirae on posterior ear; dorsal margin of anterior ear very finely crenulate. A minute sinus on posterior ear of left valve.

Upper valve with 11 internal ribs (12 if a short one between distal ends of 8th and 9th ribs be included), narrow.

Lower valve with 11 internal ribs, narrow.

One, living, 20 × 19 mm (upper valve slightly smaller).

Animal in formalin whitish, mantle edges mottled with grey.

Locality: 29° 55' S. 31° 16' E., 222 fathoms. Fisheries Survey Station K247.

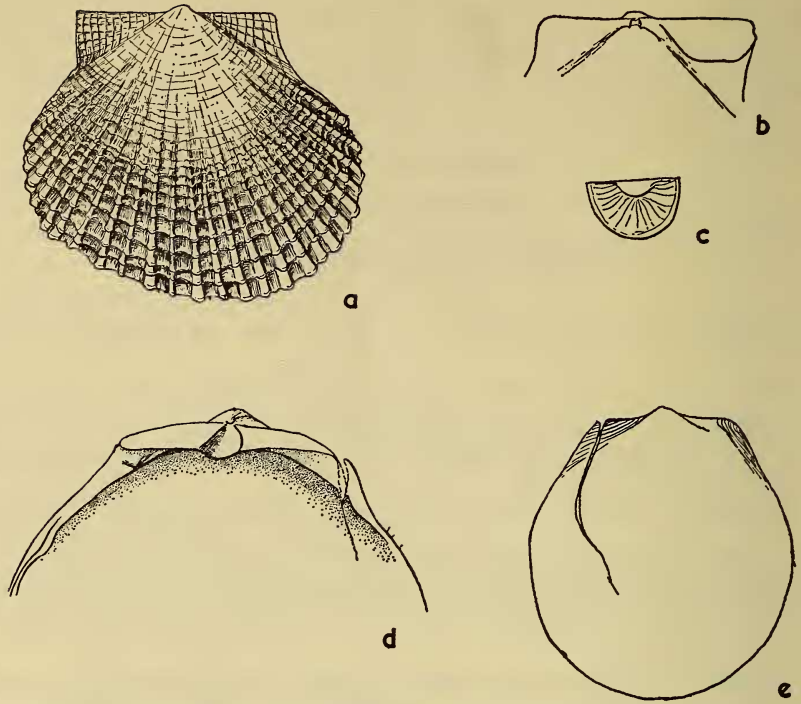


FIG. 29. a. *Cyclopecten incubans* Brnrd. Left valve, external view. b. *Cyclopecten incubans* Brnrd. Hinge of left valve. c. *C. incubans* Brnrd. Juvenile. d. *Lima symmetrica* Brnrd. Hinge. e. *L. symmetrica* Brnrd. External view of valve.

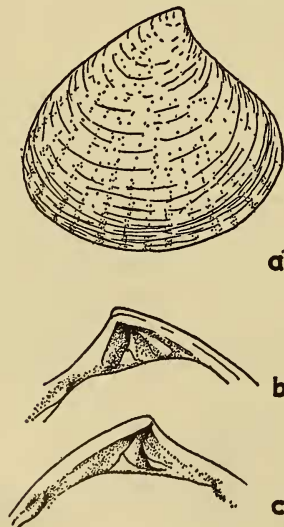


FIG. 30. a. *Venericardia nuculoides* Brnrd. Right valve. b. Right hinge. c. Left hinge.

Remarks: Similar to *A. jeffreysii* Smith, 1885, in colour, with small sinus on left posterior ear, but with fewer ribs (11 instead of 15).

Possibly *A. zoniferum* Dautzenberg & Bavay, 1912 but more highly coloured and has radial striae on right valve (not mentioned for *zoniferum*).

Possibly *A. lacteum* Dautzenberg & Bavay, 1912 but coloured; and it has an extra rib. Recorded from South Africa by Thiele & Jaeckel, 1931.

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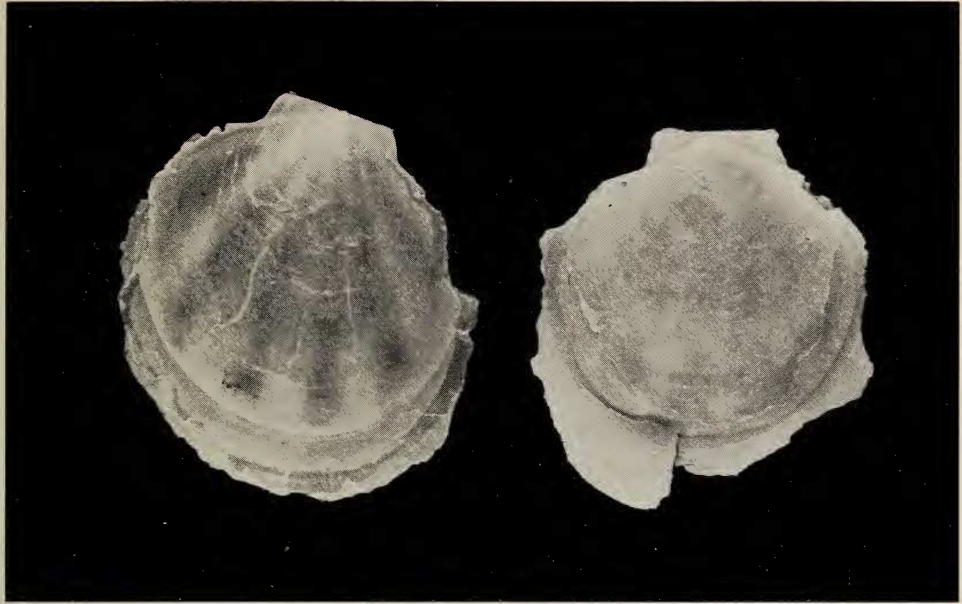
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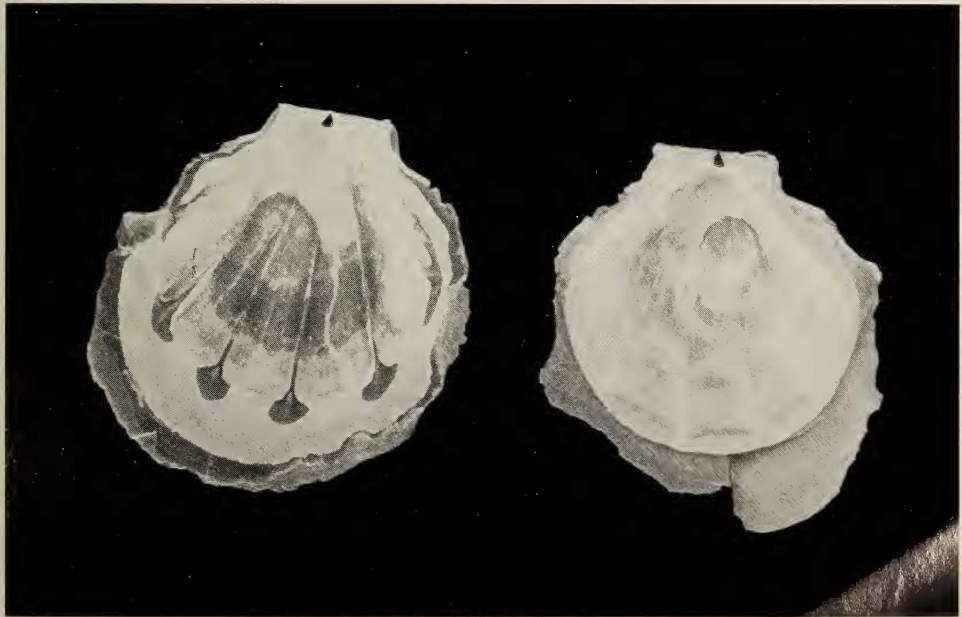
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b



c

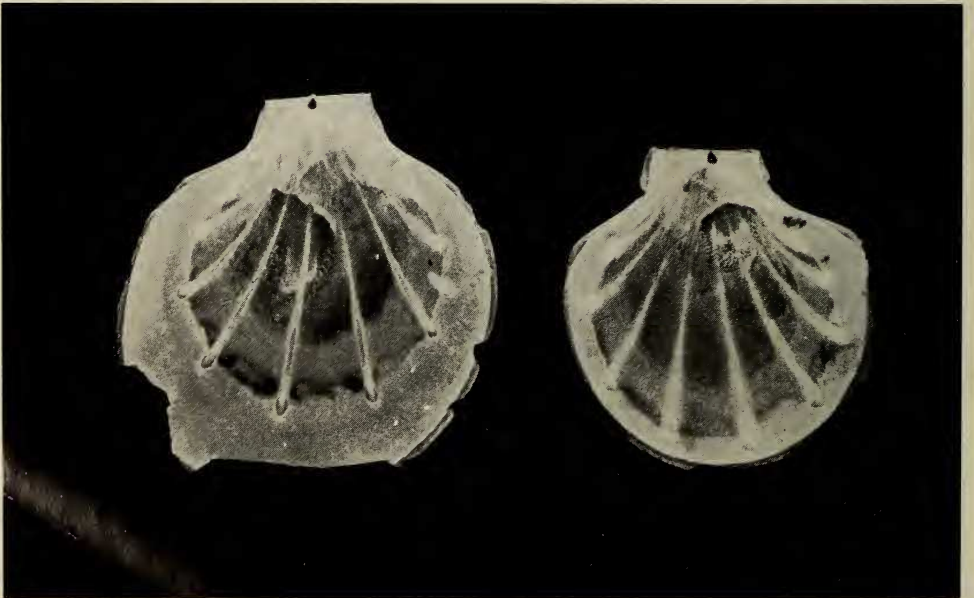
d

Amussium cf. *siboga*. a. Upper view, right valve. b. Upper view, left valve. c. Lower view, right valve. d. Lower view, left valve.



a

b



c

d

Amussium sp. a. Upper view, right valve. b. Upper view, left valve. c. Lower view, right valve. d. Lower view, left valve.